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Information Resource Center

Demonstration Projects Evaluation Report
(An Interim Report)
April 1, 1974 to March 31, 1975

Prepared by
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EPSDT DEMONSTRATION PROJECTS:

AN INTERIM EVALUATION, APRIL 1974 - MARCH 1975

Third Cumulative Evaluation Report of EPSDT Demonstrations at:

Barrio Clinic (San Antonio, Texas)
Contra Costa County Health Department (California)
Cuba Checkerboard Health System (Cuba, New Mexico)
National Child Day Care Association (Washington, D.C.)

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January 1976

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SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This report provides findings on four productive EPSDT demonstration projects located in four different sections of the nation, staffed by individuals who are highly dedicated, interested in the total health of children and concerned with the delivery of cost-effective health services. The first project (Contra Costa) operated by the Contra Costa, California Health Department, is exploring ways for more effective EPSDT delivery to urban and rural populations. The urban population served by this project is principally Black, while the rural population is principally Spanish surname farm workers residing in the eastern half of the county. The second project (Cuba), located in Cuba, New Mexico, has a rural, tricultural population--American Indians, Spanish Americans, and Anglos. The project is exploring methods for delivery of EPSDT services to rural children enrolled in preschool and school programs. Although the project also provides medical and dental screening, diagnosis and treatment, its primary interest is developmental screening. The third program (Barrio Clinic), located in San Antonio, Texas, operates from a barrio (neighborhood) pediatric clinic, and serves a predominantly Mexican-American population residing in ten census tracts in the southwest sector of the city. The fourth program (NCDCA), located in the nation's capital, serves principally younger Black children enrolled in a day care program of the National Child Day Care Association. This project, like the Cuba program, is very comprehensive in dealing with the total child and is heavily oriented toward developmental screening and treatment. A unique feature is the development of an instrument

which is fair for the population with which it is used and which serves both screening and diagnostic purposes. The NCDCA project as well as the Cuba project is working with captive (school) populations and therefore, the experience of the Cuba and NCDCA projects, though one is rural and the other urban, provides instructive similarities in working with schools.

For the periods covered for each of the four projects, 9,178 children were screened. At the time of the analysis (May, 1975) for this report data were complete on 7,426. The findings given below are, for the most part, based on this number. The ages of the children screened by the projects varied somewhat among the projects; however, for the total 41 per cent were under five years of age, 45 per cent between five and 12 years of age, and the remainder, 14 per cent, were over 12 years of age.

This evaluation effort is relatively unique in three ways. First, since a single independent agency (Health Services Research Institute) is involved in the evaluation of all four projects, pilot approaches that work in one can generally be compared with similar approaches in the others and translated to policy recommendations from a wider base. Second, the demonstrations are not evaluated on a strict goal achievement model. Although each tries to conduct the best possible program with its budget, the primary purpose is to experiment with alternative delivery modes for the purposes of refining workable solutions. In this case, the evaluation is not designed to say that the program is working--yes or no, but rather, what aspects do work and might apply on a wider level. The third factor of the unique evaluation is that much of the evaluative data are collected by project staff at the points of patient contact, as a part of the ongoing (but beefed-up) record system. The medical record is also the evaluation record. It is therefore <u>not</u> a situation

where an evaluator comes in at the end, reviews the findings and declares the result. Constant managerial feedback is given to projects, so that they may, in a timely manner, alter program operation where possible and practical. The project directors have been very cooperative in providing the data collection environment and support which is crucial to give accurate and timely data. In addition, they have provided invaluable feedback to evaluators concerning the operational meaning of the statistical results.

An EPSDT program is viewed as consisting of several interrelated elements or subsystems: case finding (process of getting children to show for screening), screening, diagnosis and treatment, and case monitoring including tracking of problems and assistance to get necessary diagnosis and treatment. The report concerns itself with aspects of these functions as well as the costs associated with each of them. In addition, the report examines the issue of EPSDT screening equivalents as they relate to the projects, and considers some of the methodological problems which must be dealt with in order to derive prevalence rates from screening findings. One additional issue dealt with in the report is the role of a sound data system in the operation of EPSDT programs. This summarization of findings and statement of conclusions covers each of these topics beginning with a summarization of screening findings from the four projects.

Summary of Findings

Number of positive screening findings: The number of positive screening findings average .8 problems per child screened, with the average number varying by project from .4 to 1.24. The distribution of problems data is available for Cuba, NCDCA, and the Barrio Clinic, and shows that, overall, 54 per cent of those screened had no medical problems and 48 per cent of all the children screened had no medical or dental problems. Twenty per cent of the children screened had two or more problems and seven per cent had three or more problems.

Most frequent conditions found in screening: The four most frequent positive findings were, in order of occurrence: dental caries (25% of children screened), iron deficiency anemia (13%), vision problems (13% of children screened for vision or 10% of total children screened), and hearing loss (9% of those screened for hearing or 7% of total children screened). This pattern did not hold for the Barrio Clinic experience in which positive genitourinary findings and pinworm placed third and fourth. Some evidence indicates that the first of these resulted from a high rate of false positives, and the pinworm findings raise the general question as to what conditions should constitute reportable problems.

Problem status: Three- to four-fifths of the problems were previously unknown and untreated, with 80% rated as chronic and 20% as acute. New and chronic conditions continue to be discovered in the screening projects.

Dental problems: Dental and medical problems tended to be associated in that those children with caries also had a medical condition, and although for some of the projects nearly half of the children were reported as having caries, the prevalence of such conditions are likely greater than these findings (primarily based on visual examinations by non-dentists) suggest.

Immunization status: Except for Contra Costa, the proportion of children with "current" status upon arrival at screening was generally low (20% to 55% of those with records) for DPT and polio, particularly among younger children. Cuba and NCDCA children were less well-immunized than those in the other two projects. In many instances, it was not possible to determine the current status of children because of absent parents, parents who did not know what their children had been immunized for, and because of non-existent, missing, or poor records.

Developmental screening findings: Since the criteria for abnormality is not well standardized for developmental problems of preschool and school age children, the ranges of normality are not well defined. Due to funding limitations for treatment, each project had to define a criteria for which diagnosis or treatment beyond discussions with teachers would be sought.

In the NCDCA project, 22 per cent of the 208 children completely screened and upon whose data were available at the time of analysis were judged in need of treatment, with five per cent having grossly serious problems. Among the NCDCA children, 40 per cent of 208 children screened were identified as having a lag in at least one of four areas--language, cognition, visual-motor, and memory.

In the Cuba project, 15 per cent were scheduled for diagnosis with five per cent with serious problems. In this tricultural population, almost 85 per cent of 806 Cuba children were identified as having one or more problems in the four areas tested--intellectual, visual-motor, emotional, or language. Over 40 per cent had two or more problems, 45 and 68 per cent, respectively, had emotional and language problems. Because of funding limitations, only the 15 per cent who had problems in three or more areas were scheduled for diagnostic evaluation.

Screening equivalents: Information obtained on children (as reported by the parents) from the Barrio, Contra Costa, and NCDCA projects indicate that

very few children had received physical examinations in the 12 months preceding the EPSDT screen. NCDCA, which requires such an examination for enrollment, found that only 36 per cent of the children have had an examination. For the Barrio and Contra Costa, the percentages were eight and 15 per cent. In total, less than one per cent of the children had been examined in a fashion comparable to that called for by EPSDT.

Case-finding efforts and findings: A two-phase study of case-finding methods by Contra Costa indicates that letters and telephone calls as case-finding methods have limited success in generating participation in an EPSDT program--resulting in less than five per cent of the target population screened. These methods are relatively inexpensive but not effective. The most effective approach as measured by appointments scheduled and kept are home visits by trained indigenous workers who take child health histories and provide health education. This results in approximately 33 per cent of the target population getting screened within several months of initial contact. An effective supplementary method is to work through community groups such as clubs, churches, etc., to encourage participation on the part of parents. One problem is how to create and sustain enthusiasm and motivation on the part of case-finding workers. The Barrio Clinic experimented with this problem by giving a bonus to workers for each child screened above a weekly quota of 12. The incentive was effective for the better workers, but had little effect on the less productive ones.

Based on the experience of the Contra Costa and Barrio Clinic projects, something on the order of four to five hours per family screened (estimated average of 2.5 children per family), including travel time and multiple visits is required for effective outreach. From the Barrio experience, it also appears that the provision of transportation and the availability of "sick" clinic services also increase the effectiveness of outreach efforts.

The Cuba and NCDCA experience indicates that screening school populations avoids many of the usual outreach problems, but has problems of its own. These are principally problems associated with synchronizing screening schedules with school schedules, in obtaining needed information from parents, problems created by student absenteeism, and the fact that children not enrolled in school or day care programs will not be screened unless an additional program is developed for them.

Case-monitoring efforts and findings: Although the data were not complete at the time of analysis, three indices were computed for assessing monitoring effort, resolution effectiveness, and overall case-monitoring effectiveness. The overall index of effort (proportion of referred problems which were reported as having received at least one tracking attempt) was .49, with a range in the projects from .28 to .78, reflecting the level of funding available for such activity. The index of resolution effectiveness (proportion of monitored problems that were reported as "resolved") was .46. This indicates that, of the problems originally declared at screening, only 22 per cent (case-monitoring effectiveness) have been brought to resolution. In an attempt to discover the reasons for nonresolution, the HSRI has found it necessary to develop more refined definitions of resolution as is discussed in the report.

Cost estimates for EPSDT based on findings in the projects: A principal

feature of the evaluation study was to allocate costs to each of the several EPSDT functions. Although the costs vary from project to project, an attempt was made to move from these cost figures to reasonable estimates of what costs can be anticipated for a well-run EPSDT program. Basic cost estimates per child screened for the several EPSDT functions are as given below. To use the table, choose the program components to go into the project, and compute a total dollars per child screened. Then multiply by the number of children expected to be screened per year to determine the total program cost. Three examples from the report are shown here:

COSTS IN 1974 DOLLARS

Subsystem	Cost per child screened Standard Program	Cost per child screened with additional Dental Treatment	Cost per child screened w/additional Dental treatment and Developmental Services
Case finding	$22	$22	$22
Screening	30*	30	(+15) 45
Case monitoring	20	20	(+20) 40
Diagnosis and treatment	35**	(+20) 55***	(+100) 155
	$107	$127	$262

* Includes all mandatory components of the screen including a gross developmental assessment--add $5.00 if a Denver or a WRAT is used.

** This estimate is based upon previous HSRI studies and not from current project activity.

*** Based on estimates from the Texas State dental program 1974. However, the State is now reporting $90 per child screened. Therefore, dental may be grossly underestimated.

From this, the standard screening package of case finding, screening for medical and dental problems, diagnosis and treatment of basic medical and dental problems, and adequate case monitoring of medical and dental conditions would cost $107 per child screened. A comprehensive program including all the elements shown above would cost $262 per child screened. This is not to imply that any one of the projects or States is currently spending this amount, but only what may be required to conduct an adequate EPSDT program.

Further explanation of the costs shown in the above table may be outlined as follows:

	Cost Per Child Screened	Comments
Case finding	$22.00	To conduct a good outreach program for screening 30 per cent of a target population.
Screening		
Medical	30.00	For basic medical screening package
Developmental	15.00	Add on, if a thorough developmental screen is conducted.
Diagnosis and treatment		
Medical and dental	35.00	Basic Medicaid diagnosis and treatment cost - includes treatment for medical problems and dental extractions and restorations for the most gross conditions in States where previous dental programs have existed. Assumes one problem per child and that nearly 100% get to diagnosis and treatment.
Developmental	100.00	Additional cost if EPSDT operates or funds a program of treating developmental and emotional problems.
Dental, if no dental program previously existed in the state	20.00	Additional cost if a thorough dental treatment program is conducted, but does not include orthodontia.
Case monitoring		
Basic	20.00	Basic cost to bring 80 per cent of the problems to successful resolution.
If developmental problems monitored	20.00	Additional cost for case-monitoring of developmental problems.

Conclusions and Recommendations

The conclusions and recommendations which follow are derived from the findings of this report, the experiences and general observations made in working with the projects as they encountered and addressed various issues and

problems in the conduct of these programs, and from the re-enforcement effect which these factors have had upon previous observations and conclusions of the earlier EPSDT impact studies by HSRI. They are given under two headings. Those which apply principally to the operation of EPSDT programs and those which should be of interest to those concerned with health and welfare issues at a national level.

Operational Conclusions and Recommendations

1. Case finding: If the case-finding function of EPSDT is principally to inform families about the services for their children, then communication of the fact via notices, letters, and telephone messages for those families having telephones is adequate. If the case-finding function entails more than informing, then the experience gained thus far by the projects suggest that using trained indigenous community workers working on a flexible (non-nine-to-five) schedule and providing transportation when needed is the most effective and cost-effective way of getting children screened.

Recommendation: Until additional studies are completed to show more cost-effective techniques, the use of community aides, who are well supervised, given the flexibility to visit clients during convenient hours and with appropriate methods of contact and the ability to offer transportation services should be encouraged. When such personnel are employed, they should be allowed four to five hours of field working time per family screened. Since such an activity costs $22 per child screened, continued effort in exploring and devising more cost-effective methods is recommended.

2. Case monitoring: One of the most important links in the EPSDT chain, if the aim is to diagnose and treat those conditions detected by screening is tracking and follow-up. Currently, however, this is one of the weaker links of the EPSDT program. Among the several factors which contribute to this fault in follow-up are: (a) overemphasis on screening itself; (b) treatment sources are not always available or require waiting, and families are not always cooperative; (c) the data (information) system of many projects are not such that permit relatively easy and systematic follow-up of cases; and (d) on limited funds, there is a trade-off decision which must be made between getting children in for screening and monitoring diagnostic and treatment outcomes.

Recommendations: Continued emphasis (in reporting requirements) of the results of diagnosis and treatment is recommended. States must be given an incentive to conduct the case monitoring (tracking of children and assistance in getting them to treatment). Further experimentation and study are also recommended to find more effective ways of informing parents about screening outcomes, whether negative or positive; and for determining appropriate staffing ratios and skill levels to use. The new EPSDT demonstrations in Dallas, Miami, and New York address these issues in the large urban areas.

3. Immunizations: Many children appear at screening sites whose immunization status can not be confirmed by records or by a parent. However, large numbers appear whose immunization status is unknown or uncertain. What to do about such children is a question which has not been adequately addressed. Moreover, there is an additional question as to how many of those children, whose records show them to have had all needed immunizations, are indeed properly immunized.

Recommendations: All EPSDT programs should be required to report the immunization status of each child screened, not simply that immunization status was or was not checked. All children whose immunizations are known to be incomplete should be brought up to date at the time of screening unless the screener has absolute trust in the school health nurse or other providers. The risk of over-immunization appears to be far less than not being immunized.* To correct this deficit at the time of screening is far more certain and less costly than referring the child elsewhere for this service. The ongoing liaison between Medical Services Administration and the Center for Disease Control should continue and should promote and implement a policy of immunizing at screening sites. Finally, sample serologic studies to determine immunologic levels of presumably fully immunized children are needed.

4. Dental treatment: Dental caries was the most frequent condition found by screening. All the projects encountered problems in obtaining treatment for Medicaid and non-Medicaid children alike. For the latter, it was the lack of funds and providers. For Medicaid children, inadequate fees prevent many dentists from participating in the program. If treatment providers cannot be obtained, screening for dental problems has little value.

Recommendations: It is recommended that the Medicaid fee structure be modified to provide an adequate (usual) fee for a child's first visit and that a scale be developed for determining a reasonable allowance for a treatment plan to be effective without prior authorization. If adopted, treatment plans and cost should be periodically and systematically monitored.

5. Developmental screening and treatment: Findings from the Cuba, NCDCA, and Barrio Clinic, though not sufficient for making general prevalence statements, indicate widespread existence of language and learning disabilities, and emotional and behavioral problems. Such problems constitute serious handicaps for any child in the process of preparing him or herself for responsible adult life. Use of screening instruments other** than those such as the Denver Developmental test identifies a greater number of children with language, psychomotor, cognitive, and emotional difficulties. The Cuba experience indicates that such screening can be conducted by indigenous bilingual paraprofessionals with training and working under the supervision of professionals in about 20 minutes per child.

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* This recommendation is in keeping with CDC current thinking as indicated via informal communications.

** Instruments used in NCDCA project and a series of tests used by the Cuba, New Mexico project.

Recommendations: Additional attention needs to be given (a) to the validity and reliability of the Cuba and NCDCA instruments; (b) to the training and supervision required for paraprofessionals conducting such screening; and (c) to provision of procedures on how and by whom should feedback to parents and teachers be given. There is also the equally or more difficult problem of providing treatment and remedial services which are in short supply nationwide. EPSDT programs should work with local agencies to encourage the development of programs for treatment and remediation of children with developmental problems. In this regard SRS should provide a clear policy regarding the relationships State agencies should develop with schools, community mental health centers [as called for in Section 206, (c), (3) D of PL94-63 of the Community Mental Health Amendments of 1975], or private practitioners for funding treatment of developmental problems. This is particularly important for the preschool and early elementary children where problems can often be treated on an outpatient basis. The Bureau of Handicapped Children, NIMH, and SRS need to make a joint statement about directions being considered for payment of treatment of developmental lags. The demonstration projects to be funded by the Bureau of Education for the Handicapped (under Title 91-230, Part C of the Education of the Handicapped Act) appears to be a step in the right direction for treatment of language and learning difficulties due to environmental deprivation, but begs the issue of continued Federal or State funding for such activity.

6. EPSDT data systems: The work with the four projects clearly indicates that an EPSDT program without systematic and efficient means for recording screening findings and tracking what happens to children for whom problems are identified, cannot with any degree of ease and accuracy determine what has been accomplished. Without standardized definitions of what constitutes positive screening findings and standardized reporting procedures, it is impossible to determine what changes, if any, occur through time as children are screened periodically or to make meaningful comparisons among findings in different areas of the country. New reporting requirements proposed by Medical Services Administration are a step in the right direction and with more precise definitions should be easily met by a program which is keeping adequate data to manage its own program.

Recommendations: Careful attention should be given to the minimal amount of data which each screening program must capture in order to effectively manage itself and accurately report its outcomes. Emphasis should be primarily upon management functions and secondarily upon reporting requirements. Technical assistance, consultation, and direction based upon stated program objectives and agreed upon definitions and data procedures should be provided. To do this may require periodic regional level conferences for State and local EPSDT program managers and data personnel because it is imperative for program persons to understand the usefulness of the data being collected.

7. Funding levels: All projects totally underestimated the funds needed to cover the costs of adequate case finding and case monitoring efforts and adequate record keeping.

Recommendations: When State or local programs negotiate contracts to conduct EPSDT, at least $42 per child screened should be allocated to the activity of case finding and case monitoring.

National Policy Issues

Effort to implement a national program of the magnitude and complexity of EPSDT is beset by many hindrances. Not the least among these is the view that the potential of such a program for correcting the problem which it addresses is uncertain, but the dollar cost of the attempt is high. Such inertia may be overcome by use of the stick, the carrot, or by a combination of the two. The rub is that SRS, the national agency charged with implementation of EPSDT, is virtually without an effective stick and has few carrots which are palatable to the States.* It can apply a one per cent penalty against States found out of compliance with regard to their EPSDT programs. Although some States have been declared out of compliance, the penalty has not yet been exacted on any State. There is also evidence that threats of using the sanction tends to beget minimal token action rather than generating positive action to achieve the aims implied by the "spirit" of the program. In brief, SRS is confronted by an inertial force of no small magnitude, and few resources or sanctions to apply as a counter or corrective force. In the face of a declining economy and rising costs, the inertia is increased. In this rather impossible situation, SRS is subjected to Congressional criticism and criticism from some quarters of the public sectors. Without a clear Congressional and executive understanding and will to implement the program, SRS is in an untenable position of having the responsibility to implement the program without having an adequate mandate or authority for meeting the responsibility.

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*The stick of compliance is too powerful to use and the States need to be sold on the fact that a high match rate is one form of economic development (i.e., getting more federal funds coming into the State than leave) and need information to show that EPSDT can improve the human capital of the State. This last point is difficult when many of the benefits accrue to the national economy and not the State!

The following discussion of recommendations is made to call attention to certain problems and issues which need addressing at the policy level. This is done from the point of view that the program is up and operational, but faltering because of unclear objectives and operational policies. That is, there are certain prior questions which are not addressable at this time. For example, how many of the eight to twelve million children must be screened and treated for conditions found, in order for the program to be cost-beneficial? The issues addressed are: how to get children in for screening, how to get them to providers for diagnosis and treatment, how to get more providers involved in the program, how best to deal with the problems of unimmunized or inadequately immunized children, and finally, the issue of how are developmental and emotional conditions best dealt with and by what responsible agency.

1. Case finding: A most critical problem of the program is how to get children in for screening.* The evidence clearly indicates that usual methods (notification by case workers, letters, etc.) are generally ineffective. Case-finding methods by two of the projects indicate that rather intensive efforts to produce a high penetration rate (i.e., proportion of eligible population screened) are some four to five times more successful than the usual methods. It is not known if the methods employed are the most effective. If considered the most effective, then the level of penetration attainable may not exceed 50 to 60 per cent. Two additional approaches advocated on occasion are to make receipt of welfare contingent upon having one's children screened or, less controversially, to make screening a prerequisite to school attendance, an approach which two States (California and Florida) have adopted in some form. Federal agencies have no authority to require either of these. The first, if required by a State, would raise civil issues of a most serious sort. Requiring that all children be screened for school enrollment would not include younger children among whom the screening "payoff" is likely the best, and raises questions: would the requirement be placed only on eligible children, or all? If the latter, who pays for screening the non-eligible? If only eligibles, then additional civil questions arise.

*On the basis of current knowledge, this problem does not arise from any special order of contumacy on the part of families. It is probably best accounted for by the generally weak preventive orientation of the American populace.

Recommendations: Increased or full Federal funding should be made available to EPSDT programs for case-finding services, and funds for experimentation with various case-finding procedures should be continued in order to assess innovative and cost-effect techniques. Possible ways of working with the schools should be demonstrated, such as payment of "impact" funds to the school districts with high proportions of Medicaid children. Incentive schemes for schools to refer Medicaid children to a screening provider would be another possibility to EPSDT-school coordination.

2. Case Monitoring: The findings from the four projects indicate that, even in rather well disciplined programs, special efforts have to be exerted in order to get children to indicated diagnostic and treatment services. Here, as in case finding, case monitoring itself costs money and generates additional costs in that services which would not have otherwise been received are now obtained. Evidence from several States indicate rather strong resistance to both case finding and monitoring because of increased costs.

Recommendations: Here, as with case finding, increased or full Federal funding is in order for monitoring.

3. Screening, Diagnosis and Treatment: Many providers, particularly physicians and dentists, do not participate in the program, at least in part, because of the fee structure. This, in effect, creates a shortage of providers and limits EPSDT programs in obtaining diagnostic and treatment services for children requiring them.

Recommendations: Fee structures for treatment services provided as a result of screening referrals (and for screening) must be upgraded to give providers incentives to participate.* The State of Texas' dental program provides an example of the private sector's response to adequate fees, wherein 25 per cent of the private practitioners are now participating. In addition, funds could be made available to local medical and dental societies to work with EPSDT programs in the training and use of non-professional screening personnel.

4. Diagnosis and Treatment: The States tend to be reluctant to conduct a full scale EPSDT program due to the large State's share of costs for payment of diagnosis and treatment services.

Recommendations: Federal contribution for diagnosis and treatment should be increased to 90 per cent.

5. Dental: Since prevention of dental caries is one health area in which a high level of effectiveness can be achieved, it is a curious fact that caries are the most frequent condition found among children screened. This no doubt results from poor dietary and dental hygiene habits and a lack of prophylactic care.

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* The relationship between the average fee and quantity of physician services provided to Medicaid patients (versus non-Medicaid patients is not well documented. According to some health economists, physicians respond to overall higher average fees by reducing the number of patients seen.

Recommendations: SRS should work with other Federal agencies with dental health and dental care concerns to promote and conduct programs of preventive dental health for children and their families via television network, sponsoring program advertising aimed at children for reducing consumption of sweets, chewing gums, and heavy sugar treated foods.

6. Developmental Assessment and Treatment: It has long been known that 10 to perhaps 30 per cent of the children and youth of the nation have some developmental or emotional problems. The findings of two of the projects in this study confirm this fact rather forcefully. There are two problems: where do children go for diagnosis and treatment, and who pays? These are general, not unique to the demonstration projects. Unfortunately, the problems are not subject to easy, simple and inexpensive solutions. At present, and specifically for the target population, it is not entirely clear where the responsibility for these children is and what the SRS mandate is for solving the problem. On the one hand, it seems unwise and useless to detect problems by screening if nothing can be done for them while, on the other hand, it appears equally unwise not to make a strong remedial effort. Failure to correct many of these problems now will no doubt increase the number of socially dependent persons in the future.

Recommendations: As discussed under operational conclusions and recommendation (item 5), the agencies in HEW should issue a joint recommendation concerning responsibilities, program directions, and funding mechanisms and limitations for the treatment of developmental and emotional problems discovered in the developmental assessment portion of EPSDT screening. In addition, local screening programs should be advised to establish a multi-discipline committee to review the developmental instruments to be used since both NCDCA and Cuba found that some existing instruments have segments which are not fair in assessing the developmental capability of the population being tested.

This summary and report has attempted to depict the major findings of the EPSDT demonstrations as can be documented at this time. Policy makers at the MSA and SRS level should try to visit each project to gain the type of flavor and insight to local service delivery problems and successes which cannot be adequately explained. Each project offers a hospitable and professional insight to a complex, but rewarding, task--EPSDT.

CHAPTER 1

INTRODUCTION

Early and Periodic Screening, Diagnosis and Treatment (EPSDT) first moved toward full implementation in mid-1972. At this time the Social and Rehabilitation Service (SRS) funded the Regional Health Services Institute (HSRI) at the University of Texas Health Science Center at San Antonio. The mission of the Institute was to study issues and problems related to the delivery of health services to the poor. During the first 18 months of its existence HSRI studied the impact of EPSDT services in several states with particular attention in Phase I to screening effort in terms of number screened, multiple screening, screening costs, and added Medicaid costs resulting from screening. Phase II of the research focused principally on tracking mechanisms and outcomes as children moved from screening to diagnosis to treatment.

While undertaking the impact study, HSRI had established a relationship with an EPSDT demonstration project in San Antonio for the purpose of helping it develop a case management system useful for both managerial and evaluation purposes. By late 1973, HSRI had, through the auspices of the SRS Office of Research and Demonstration, established relationship with three other EPSDT demonstration projects for similar purposes. These three projects are located in Contra Costa, California; Cuba, New Mexico; and Washington, D.C. Each of the four projects are described in greater detail in Chapter 2.

Previously, there have been two quarterly "evaluation" reports on these projects by HSRI. Beginning with this, the third report, future reports on the projects will be semi-annual until such time as each project terminates.

This report differs from former reports on the projects in that they focused primarily on screening findings and costs, while the present report, although in a preliminary way, examines the four projects from both a more comprehensive and detailed view. However, screening findings of the four projects are included and these contain screening results given in the first two quarterly reports cumulated with those reported by the projects for the last six months of the 12-month period extending approximately from April 1, 1974 through March of 1975.

The report represents something of a milestone in the brief history of EPSDT* in that it provides findings which permit useful degrees of comparability and contrast among four different demonstration projects screening different ethnic populations in four different sections in the nation. The extent of comparability among the four projects, though at this stage of design and development not fully adequate, reflects the effort of the four programs and HSRI to arrive at a common set of definitions for identifying and reporting screening findings in a manner to allow meaningful comparisons. From a base of common (similar) data collected by the screening of the projects and from findings generated by their special interests and objectives, a number of results relevant to more meaningful policies, program design and efficiencies for EPSDT should eventuate.

The contents of this report may be generally anticipated outlining what each of the following chapters contains.

Chapter 2 describes each of the four projects in terms of their settings, staffing patterns, and objectives.

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*Actually, it may be a milestone in the history of demonstration projects. So far as is known, these are the first demonstration projects which, having a relatively identical goal, have been subjected to relatively similar evaluation procedures by an outside agency.

Chapter 3 examines the need for a systematic approach in the management of an EPSDT delivery system and describes in some detail the computerized data system developed for the projects for both management and evaluation.

Chapter 4 describes the definitions used by the four projects for identifying and reporting screening findings, and gives a brief discussion of the problems of reliability and validity of data generated by such programs, and examines the possibility of making prevalence statements from screening findings in light of problems arising because of false positive and negative screening findings.

Chapter 5 presents selected medical screening findings for the four projects for a period of approximately 12 months.

Chapter 6 deals with the problem of screening equivalents, i.e., how many children do not need EPSDT screening by virtue of recent or regular visits to physicians for medical care?

Chapter 7 covers some of the issues and problems associated with screening of children for developmental and emotional problems, and reports screening findings for three of the projects which screen for these conditions.

Chapter 8 considers the outreach function of EPSDT programs and presents preliminary results from the Contra Costa project's pilot study testing the effects of different outreach methods.

Chapter 9 discusses the critical function of follow-up or case monitoring to see that children obtain needed diagnostic care and treatment and presents some preliminary results from the projects' experience in terms of two indices of case monitoring.

Chapter 10 goes into considerable detail about costs for outreach, screening, diagnosis and treatment, and case monitoring. Cost estimates for planning and budgeting EPSDT programs are provided.

Summary, Conclusions, and Recommendations are placed at the beginning of the report for early and rapid review.

Finally, it should be noted that considerable use has been made of numbered tables in an effort to make the information contained in them an integral part of the text. Numbered tables and figures have been used principally in Chapter 5 which presents screening findings. These tables and figures appear at the end of the chapter. Appendices have been used rather generously in connection

with Chapter 3 which describes the computerized Common Data Base system. These are all placed at the end of the report.

When analyzing the EPSDT programs, HSRI has divided the process into four major activities--(1) getting the children to the screening site, (2) screening, (3) the diagnosis and treatment, and (4) tracking to ensure diagnosis and treatment is received along with help and encouragement for parent(s) to take children to the providers. Settling upon names for the first and the last activity (or subsystem) has been difficult since certain phrases such as outreach and follow-up have so many different connotations for the two major activities. Therefore we are using, for the purpose of this report, the following definitions:

Case finding: the activity of motivating and assisting parent(s) to bring eligible children to the screening process. This is sometimes referred to as outreach and sometimes as recruitment.

Screening: the actual process of applying standard tests and procedures to determine whether the child may possibly have problems needing diagnosis and treatment.

Case monitoring: all activity occurring once the child shows for the initial screen to:

a. ensure screening completion
b. track the status of problems referred
c. offer necessary assistance and encouragement to get children diagnosed and treated
d. getting children back for periodic screens.

For activity reported in this report, items b and c are the primary elements.

Diagnosis and treatment: the process of further testing to determine the nature of a problem referred by a screening test and either declaring the child normal or administering medical or dental procedures, medications or education.

CHAPTER 2

THE DEMONSTRATION PROJECTS AND EVALUATION APPROACH

Amendments to Title XIX of the Social Security Act of 1967 required the States to provide Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) services for all Medicaid eligible and medically needy children under age 21. For a number of reasons, including ambiguities in the legislation and the intent of congress, uncertainty regarding the locus of EPSDT administrative control, the existence of other programs with screening objectives, and resistance on the part of the states over cost concerns, the final regulations and guidelines for EPSDT were not issued until June, 1972. By this time, responsibility for the program came to rest upon the Medical Services Administration* (MSA) of the Social Rehabilitation Services. In late 1971 and early 1972 MSA got down to the massive and complex task of launching a nationwide screening and treatment program .

Although the concept of screening had long been present in a number of federally supported health programs for children, there was yet a great deal to be learned: How is a screening program best organized to meet different conditions and needs of different populations and localities? What should a screening battery consist of? What sort of personnel can or should do the screening? What are the most effective and efficient methods of outreach and follow-up? What sorts of records and information systems are best suited for

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*For an excellent review of the history of EPSDT, see Anne-Marie Foltz, "The Development of Ambiguous Federal Policy: Early and Periodic Screening, Diagnosis and Treatment (EPSDT)", Milbank Memorial Fund Quarterly/Health and Society/Winter 1975, pp.35-63.

monitoring and reporting EPSDT results? Partly to gain answers to such questions and to gain experience in operation of EPSDT programs, SRS allocated funds for EPSDT demonstration projects.

In setting up the demonstration projects, MSA sought areas in the country where there was a high level of interest in EPSDT screening in existing or incipient health programs, where there appeared to be a need for the services EPSDT could provide, and in rural and urban areas where there were concentrations of children representing the several major ethnic groups. By various circumstances, demonstration projects were established in certain localities in California, New Mexico, Texas, and Washington, D.C. A brief description of each of these programs in terms of their organizational characteristics, their locale and target populations, and general objectives follows as a background for the findings reported in subsequent chapters.

Demonstration Projects

Texas: The Barrio Comprehensive Child Health Care Clinic (the Barrio Clinic) is operated by the Commission on Mexican-American Affairs of the San Antonio Archdiocese of the Catholic Church. The Commission is a separately incorporated non-profit organization with its own executive director. Members of this organization, in cooperation with other interested individuals and in the community, had been seeking funds for several years to establish a children's clinic in the west side of San Antonio. Some success had been achieved by establishing a part-time clinic in one community center with a small amount of Office of Economic Opportunity funds. The funding of an EPSDT demonstration in the Barrio came about as a result of an inquiry by the Commission to SRS regarding possible financial support for a clinic.

The Barrio Clinic is located on the west side of San Antonio, a city of some 800,000 inhabitants. Of this number, approximately 51 per cent have Spanish surnames, and in the 10 census tracts which more or less define the clinic's catchment area, some 93 per cent of the population has Spanish surnames. The 1970 census reports median family incomes in these tracts ranging from $2,482 to $6,339, and median years of education for persons aged 25 years or older ranged from 4.3 years to 7.3 years. Children and youth under 21 years of age accounted for 53 per cent of the estimated 93,000 persons in the 10 tracts.

The proposal setting up the clinic called for the delivery of both EPSDT services and medical treatment for sick children. The clinic operates five days per week and one evening clinic per week with approximately 75 per cent of the time devoted to screening and 25 per cent to treatment. The full-time administrative director of the clinic is a registered pediatric nurse. The medical director is a pediatrician who performs this function on an unpaid, part-time basis. The full-time staff of 14 full-time and six part-time persons includes two registered nurses, two licensed vocational nurses, six outreach workers, two secretaries, one driver, one records technician, three part-time tutors, and three part-time speech-therapy aides. Six part-time physicians and one dentist conduct physical and dental examinations and provide treatment for children with minor acute conditions. The physicians are paid a fee of $4 per child examined or treated. Since the Clinic was developed as a demonstration, the services which it offers were made available to all children residing in the area, i.e., regardless of their eligibility for Medicaid services.

The objectives of the Barrio Clinic as stated in the original 1972 proposal to SRS were, in summary form, as follows:

1. A child health care program at two neighborhood centers (one in a heavily Mexican-American area, one in a Black area*), where qualified pediatricians and dentists will hold regular office hours. Participating physicians and dentists will be reimbursed on a fee-for-service basis;

2. A staff training program in which community residents will receive training in community outreach techniques, nutrition and consumer education, diagnosis of family needs in order to make referrals and maintain linkages with appropriate social and public service agencies, etc.;

3. A community outreach program in which the community outreach workers will communicate with families within the catchment area to assure that all eligible children are being reached for early screening, diagnosis and treatment and that families are being provided health education. A rented station wagon will be used to transport staff and clients for follow-up screening and treatment;

4. Development of a uniform record-keeping system, which will serve as the core of a centralized, longitudinal effort to keep track of Barrio children, their health and family circumstances, and the adequacy with which their needs are being met;

5. Utilization of the record-keeping system to obtain baseline data for evaluation of the project and analysis of its cost effectiveness in meeting the health needs of the population served. It is expected that if the project continues for several years, vital information will be gathered regarding the value of preventive medicine in improving both the physical and mental health of the clients served. If data can be collected for a decade or more, the effect of preventive medicine and health education on economic patterns and educational attainment can also be researched;

6. Utilization of the project as a model for replication in other communities as the Social Security requirement that early screening, diagnosis and treatment programs be implemented throughout the nation takes effect;

In the third year, the goals were listed more specifically as follows:

1. Perform a total of at least 3,700 screening examinations in the period of July 1, 1974 through June 30, 1975, and perform all screening steps appropriate to each individual child.

2. Specify a clinic treatment plan and/or refer to community providers all detected abnormalities.

3. Follow up all significant health problems to ensure optimum problem resolution.

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*Funds were insufficient for both areas.

4. Provide a comprehensive care setting in which families in need may receive episodic care.

5. Increase the immunization of children screened to at least a level of 60 per cent up to date.

Before closing this brief description of the Clinic, it should be noted that it was funded by SRS for three years. Prior to the termination of the SRS grant, the Clinic received a grant from the Robert Wood Johnson Foundation to continue its operations for an additional three years following cessation of SRS funding. In addition to these continuation funds, the Clinic has received a supporting grant from the Hogg Foundation for Mental Health in partial support of the Clinic's training program for children with developmental lags, especially in language and learning.

New Mexico: The demonstration project in this State is operated by the Checkerboard Area Health System (CAHS) of the Presbyterian Medical Services program of New Mexico. The project is headquartered in Cuba, a small village of some 1,500 persons, located in the northwestern sector of the State. The area served covers 4,000 semi-arid square miles containing approximately 10,000 persons. Ethnically, the population is 30 per cent Spanish surname, 65 per cent Native American (Indian), and 5 per cent Anglo. The population 25 years of age and over had a median of eight years of schooling as reported in the last census. Most of the families living in the Checkerboard area are below the poverty level; 84 per cent are borderline or below the Office of Economic Opportunity poverty level; but only 13 per cent received welfare in 1970. Eighty-five per cent of the population is spread out over 4,000 square miles for an average of 2.5 persons per square mile. Many buildings are dilapidated, with water, sewage, and sanitary systems lacking or inadequate. Wood is generally used for both heating and cooking. All of the highways are unpaved

and often impassable in winter. Telephone service is available to only five per cent of the population and is often undependable. Ethnic and language barriers seriously affect the chances of many children in adjusting to and benefiting from the traditional educational system as well as the employment system. The rural economy, principally sheep grazing among the Navajo, consists of few and low paying jobs. Unemployment is high.

The EPSDT demonstration grew out of a prior demonstration project funded by SRS designed to explore and test a concept of a health care delivery in a poor and sparsely inhabited tricultural rural area. The project emphasized primary preventive health care through extensive use of project-trained, indigenous, health care aides working under the immediate supervision of medical professionals and paraprofessionals.

In August of 1973, SRS funded an amendment to the existing demonstration grant. This amendment placed emphasis on screening for developmental and learning problems in the tricultural population. Specifically, the intent was to use and modify existing instruments to detect children with such problems, to get them into remedial care, to train persons from the local area to administer the tests, and to assess the effectiveness of the tests and procedures used in the screening. At first, all medical screening was done by the CAHS Clinic; the project was concerned only with developmental screening. This proved less desirable than was first anticipated with respect to referrals, transportation, record keeping, and follow-up. The general result was fragmentation of service. Partly because of such problems, and partly because the concept of EPSDT is a combined medical program, the project assumed responsibility for conducting all aspects of the screening--medical as well as developmental.

The screening is conducted in public school, mission schools and Bureau of Indian Affairs schools in the Checkerboard area. In contrast to the previous year, the screening schedule to be followed for the 1975-1976 school year is to spend two weeks at each school. The first week will be devoted to screening, and the second to providing feedback to parents, teachers, and school administrators. Screening is conducted in two phases by two teams--a developmental team and a medical team which share personnel. The first phase is the developmental screen which requires about 20 minutes per child. The screening battery tests for problems in four areas: intellectual functions, visual motor perception, language facility, and emotional adjustment using the Human Figure Drawing, parts of the Wechsler Intelligence Scale for children, and the Bender Gestalt. This screening is done by screening aides under the supervision of two psychologists. The second or medical phase of the screen is conducted by a team consisting of a pediatric nurse practitioner, a licensed practical nurse, and three screening aides, all of whom are backed up by a CAHS physician. Diagnostic studies indicated by screening are done by the two psychologists associated with the project.

The staff, in addition to the full-time director, consists of ten full-time persons: a pediatric nurse practitioner, a licensed practical nurse, three screening aides, a secretary, a data technician, a remediation specialist, an outreach worker, and a custodian. Part-time staff include the two psychologists, a physician, and several unpaid volunteers.

The project goals as stated in the 1975 renewal proposal are:

1. To determine cost-effective ways of conducting an integrated health, medical, and developmental screening program for children utilizing rural school facilities, and ensuring that treatment is received and problems resolved by case monitoring using computerized data.

2. To develop cross-cultural developmental screening procedures and screening package.

3. To train indigenous paraprofessionals, parents, and volunteers to conduct screening and assist in treatment.

4. To develop agreements and referrals for services with the schools such as the University of New Mexico, Welfare Department. Crippled Children Services, Vocational Rehabilitation, and other appropriate agencies, and serve as facilitator between these agencies and families.

Contra Costa County, California: Contra Costa County, California, located northeast of the San Francisco Bay, is the site of an EPSDT demonstration which emerged as an outgrowth of a Health Care Outreach Demonstration Project initiated in 1971 by the Contra Costa County Department of Social Services with the support from the Medical Services Administration of SRS. The purpose of the EPSDT project, administered by the Contra Costa County Health Department, is to provide a model of comprehensive EPSDT in two target areas--urban and rural--through a service integration approach. Two areas, Richmond (urban--West County) and Brentwood (rural--East County), were selected to provide a comparison between effective programs in a densely populated urban poverty area and a sparsely populated rural poverty area.

The urban screening site is located in Richmond, a city of some 50,000 inhabitants. The 1970 census data showed a total population of the nine census tracts served by the project of 22,332. The racial composition of the population was 44 per cent Black, 54 per cent White, and 2 per cent of other races. Approximately 25 per cent of the White population had Spanish surnames. The median number of years of school completed for persons 25 years of age and older for the nine census tracts area was 10.8 and the median family income, $6,975, and some 45 per cent of the area residents received public assistance. The $6,975 median income in the target area is approximately

one-half the $15,026 median income in the San Francisco Bay area.

East County is a large, sparsely populated rural area comprising 21 per cent of the total county land area. The five census tracts served by the projects contained 13,889 inhabitants in 1970. The screening facility is located in the one incorporated place, Brentwood, with a population of some 2,649 persons. The East County population is predominantly employed at farm labor, working on a seasonal basis. Thirty-one per cent of all families receive public assistance. The 1970 census showed over half of all children (52%) were in families earning less than $4,000 per year. According to census data, approximately 27 per cent of the population had Spanish surnames, 73 per cent other, and less than one-tenth of one per cent Black. However, the per cent with Spanish surnames is probably larger due to the large number of Mexican aliens in the area. Children served by the Clinic are primarily Mexican-American. In Brentwood, 57 per cent of the adults had an eighth grade education or less.

The goals, as given in the 1974 continuation proposal were as follows:

1. To develop one-stop service models for delivery of comprehensive screening with linkages for diagnosis and treatment of children in the target areas.

2. To increase program effectiveness through a monitoring (tracking and case management) system.

3. To develop linkages and coordinate private and public child health services in the target areas.

4. To increase citizen participation in design and delivery of health care services.

5. To increase knowledge of hygiene in target areas.

6. To document services for cost-benefit analysis of the two target areas.

The project is staffed as follows: the urban or Richmond staff includes

a pediatrician, one registered nurse, three pediatric nurse practitioners, nine community health or outreach workers, two other full-time employees, and a social worker consultant. The staff serving Brentwood, the rural part of the county, consists of a pediatrician, one registered nurse, two pediatric nurse practitioners, three outreach workers, and one secretary. Two other full-time staff members serve both screening centers, and a health education consultant is available for both centers.

Washington, D.C.: The National Child Day Care Association (NCDCA) EPSDT demonstration project is located in the Area 6 Model Cities area of Washington, D.C. The 1970 census reports a population of 79,157 in the area--91 per cent Black, 9 per cent White. The Median family income was $6,612 and the median years of school was 9.9 years. NCDCA, supported by funds through the District of Columbia Department of Human Resources (DHR), from the Department of Health, Education and Welfare, the United Planning Organization, Bureau of Education for the Handicapped and the National Institute of Education, operates 19 preschool and six after-school day care centers. Parents enrolling their children in the centers are primarily low-income and working, or enrolled in institutions of higher learning. The EPSDT project serves eight preschool centers and six after-school centers located in the model cities neighborhood. An estimated 750 children attend the 14 centers and provide a "captive" population for the program. Turnover in enrollment during the school year, and from year to year, inflates the number of children to an unknown extent. The fact that the population is more or less "captive" was thought to be an advantage for reducing outreach effort and follow-up difficulties. During the first year of the project, children were transported to the EPSDT clinic for different screening elements on different occasions. This, coupled with

a relatively high rate of absenteeism, resulted in many incomplete screens. To correct this, all parts of the screen, except for dental, which includes cleaning and fluoride treatment at the dentist's office are performed by project staff and a DHR physician at the EPSDT clinic at 1106 N. Capital Street. Presently, it is anticipated that a DHR mobile screening van will go to centers to provide screening in Fiscal Year 1976.

The general goal of the NCDCA EPSDT project is to demonstrate a viable cost-effective method of implementing EPSDT services through a child day care system. The objectives which the project set for itself for Fiscal Year 1975 were:

1. To demonstrate an approach to an improved delivery system for EPSDT programs by coordinating EPSDT with an ongoing day care system.

2. To arrange screening, diagnosis, and treatment of eligible children in the project target population in conjunction with the Washington, D.C. Department of Human Resources.

3. To provide a program that will identify and assess preschool children with developmental problems and enable them to receive help while still enrolled in the day care center.

4. To design the program so as to achieve maximum effectiveness as a demonstration of a cost-effective, efficient delivery system for EPSDT services and to provide a basis for evaluation of the impact of this effort.

5. To staff a Therapeutic Nursery School to serve children with emotional problems.

A special effort of the project with respect to the third objective is the development of a screening and diagnostic instrument that is fair for the population of Black preschool children in Washington, D.C. This instrument is used for assessing developmental problems among the children enrolled in the project.

The NCDCA EPSDT staff consists of one project director, one registered

nurse, one licensed vocational nurse, one full-time social worker, one part-time social work associate, two teachers, two associate teachers, one therapeutic and one developmental teacher, one secretary, one part-time volunteer coordinator and one driver. In addition to these paid employees there is a corps of volunteers of 10-12 persons (but this number fluctuates throughout the year). The two nurses conduct the medical screening with all physical examinations given by DHR physicians. The social workers provide some case-finding activities and case monitoring, while the three teachers and the associate teacher are responsible for developmental screening and remedial care for those children with developmental problems. The project operates a therapeutic nursery school (TNS) which serves seven children each six months under the care of therapeutic teachers with consultation and supervision from a local psychiatrist. An additional TNS is operated by the parent organization.

The Evaluation Approach

The Barrio Clinic was the first of the four demonstration projects with which HSRI worked. The original proposal of the Barrio Clinic called for HSRI to do the following for the clinic:

1. To help define the project objectives in measurable terms.

2. To design (provide) a data collection system useful for evaluation and managerial purposes.

3. To monitor the data collection during the operational life of the project.

4. To provide analyses at relevant intervals with respect to screening findings and costs.

It was out of this effort, especially the development of the data system, that the idea of a Common Data Base arose. This occurred toward the end of the first year of the Barrio Clinic's operation. At that time the data system,

although not fully complete, was showing signs of its potential usefulness and the idea of a Common Data Base for the four EPSDT demonstration projects more or less naturally emerged from numerous conversations with the staff of the Office of Research and Demonstrations and MSA. As a consequence, HSRI was brought to a contractual relationship with the other three projects in order to implement a Common Data Base and as a step toward improved evaluation.

The four functions which HSRI agreed to provide the Barrio Clinic reflected the general intent which was to provide an information (data) system which would capture and provide rapid retrieval of information useful for managerial purposes, cost analyses, assessment of performance in terms of number of children screened, number and types of conditions found, follow-up performance, and so on. Such outputs derived from the four subsystem functions are simultaneously evaluative and managerial.

This approach, although it includes a managerial element by feedback to program administration, may be classified under the rubric goal-attainment model which focuses effort upon measurement of how well an organization's objectives are being achieved. This model describes the work of HSRI with all four of the projects, not just the Barrio Clinic. At the termination of SRS funding for each of the four projects, HSRI will prepare a final report on the projects in terms of their individual goals and objectives.

The present report is interim and partial in that it presents only selected outcomes for the projects. It is also partial by the fact that all the projects had not fully reported all cases screened in the reporting period by the time of this analysis. Additional problems are inherent in the data as a result of discrepancies in reporting procedures which came to light during the first several months of the Common Data Base operation. These problems have been

corrected and gaps in reported results should be essentially absent for the report for the final year of operation of the projects.

In the chapter immediately following, the Common Data Base is described. Before proceeding to that, a brief comment should be made regarding the results reported in subsequent chapters. The screening findings in particular are presented in what might be called a comparative framework, e.g., findings on screening outcomes for all four projects are frequently present in single tables. This is done for two reasons: 1) for economy and ease of presentation; and 2) to invite comparisons. However, it must be stressed that caution be exercised in making comparisons among the several projects. They are too different for drawing strict parallels for some outcomes; indeed, these projects were not originally designed for comparative purposes. Eventually, each project will assess its efforts and outcomes in terms of its own goals and objectives. In the meantime, the findings given in this report should provide some food for managerial thought for those engaged in the EPSDT enterprise throughout the nation.

CHAPTER 3

THE COMMON DATA BASE: TOWARD AN EPSDT MANAGEMENT SYSTEM

When the Congress amended Title XIX of the Social Security Act to provide early and periodic screening, diagnosis, and treatment (EPSDT) services, a federal health program principally designed as a third party payment mechanism was modified to create a large and aggressive health services delivery program for the less well-off children of the nation. Its size is seen in the fact that the population to be served consists of some eight to ten million children and youth under 21 years of age at any particualr point in time.* The magnitude of the program in dollars is somewhat more difficult to estimate. For example, the most recent national data (February, 1975) shows 151,257 children screened at a cost of $3,792,238 or a per capita cost of $25.07. If ten million children per year were to be screened, the cost would be $250 million per year for screening each child one time per year.** The aggressive characteristic of the program resides not only in the requirement that the families (caretakers) of the eligible children be meaningfully informed of the services and, if needed, that transportation to screening places be provided; but also that the services be provided periodically, i.e., not just one-shot

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* There are some 13 million children under the poverty level, who may become AFDC eligible at one time or another.

** These figures do not contain costs for diagnosis and treatment. However, such projections are essentially meaningless as cost comparisons among the States show. For February, 1975, Indiana reported almost 11 thousand children screened at an average cost of 14 cents each; Michigan, in contrast, screened only 9,500 children at an average cost of $164 each. Data derived from Table 22 of Medical Assistance (Medicaid) Financed under Title XIX of the Social Security Act, February, 1975, DHEW publication no. (SRS) 76-03150, NCSS Report B-1 (2175).

or sporadic screening; and that follow-up services be provided to increase the probability that health problems detected by screening are adequately diagnosed and treated.

By their nature these requirements, if effectively implemented, entail a program--a set of services which must be coordinated. Specifically, an EPSDT program is a system consisting of five subsystems of activities; case finding, screening, diagnosis, treatment and case monitoring. These are inherent in the title of the program and emerge, concretely, with a sixth subsystem when effort is set into motion to implement it. The sixth or emergent system consists of activities necessary for the conduct and coordination of the five service subsystems, i.e., a management system.

A well-designed EPSDT management system, like any other, should do the following: 1) specify where one is at the outset and what one's tasks and objectives are in rather precise terms; 2) provide a means of measuring (assessing) and monitoring inputs and outputs of the enterprise; and 3) provide this information in systematic, relatively rapid, and meaningful terms to the manager(s) for making decisions necessary for effective and efficient movement toward objectives.

Implementation of an EPSDT program appears deceptively simple. Even under the most minimal definition of case finding, screening and case monitoring, vast quantities of data are generated. Without adequate control over it, screening programs are soon awash in a mass of unordered detail. It is not possible to assess with any precise degree what a program has and has not accomplished and at what costs. Lessler has made the point well: "Screening without a program for using the information gathered is a waste of effort. Screening programs must be designed not to count problems but to help

people".* This is but another way of saying that an information system must be an integral part of an EPSDT delivery system if proper managerial control is to be maintained.

It was for such reasons that HSRI first attempted to design and implement a managerial data system for the Barrio project. Later, as HSRI began to work with the other projects, the need for order or some common system became most apparent. Ideally, an information system spanning several independently managed projects with both similar and different objectives would capture both the common and unique features of the different programs. Further, and in ideal terms with respect to commonalities, there should be a high degree of uniformity in the process of making measurements (observations) and in capturing information and in its processing and analysis. In the following description of what is called the "Common Data Base" and in the reported findings, it will be apparent that this ideal has been approached only at a distance. At the same time, however, the value of such an effort will be equally apparent for EPSDT programs. Without managerial information systems which provide accurate and relatively rapid feedback on operations and outcomes, programs can only muddle through to uncertain results.

This chapter describes in some detail the computerized EPSDT system(s) which grew out of HSRI's work with the four demonstration projects. First, a brief discussion of the purpose of the Common Data Base is followed by a description of the input forms and their content. The second section describes the computer files kept on each family and child, and each problem

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*Ken Lessler, "Screening, Screening Programs and the Pediatrician", Pediatrics 54, (November, 1974), p. 609.

identified by screening, and outlines the several steps in processing the data. This section is followed by an enumeration of the various types of output which can be obtained from the system. The final section discusses some of the problems inherent in the system.

Purpose of the Common Data Base

In its previous effort, Phases I and II, to evaluate the impact of EPSDT on data collected from various programs in several states, HSRI of necessity had to work with program data generated under a wide range of conditions and definitions. This effort to assess the impact of EPSDT on the delivery of child health services was subject to all the constraints and vagaries imposed by retrospective methods employing records not kept for research or evaluation purposes. Many of these constraints were reduced when the four demonstration projects agreed to work with HSRI to develop an information base by use of similar procedures and definitions to allow both comparisons and contrasts of screening results without altering the unique features of the individual demonstrations. An additional value of this approach was that information not otherwise available to SRS planners and policy makers could be relatively easily obtained at the point of patient contact; for example, previous health care utilization and immunization status of the children served by EPSDT. A third advantage inherent in the Common Data Base approach for the four projects was economies of scale resulting from common data processing and analysis, and a sharpening of program concepts and methodologies.

Data Forms and Content

Since the four projects were in different stages of development and

operation at the time the idea of a common base of data emerged, it was not possible to institute a reporting procedure based on a common set of forms capturing common information elements. Each of the four projects collect and report screening findings on differently designed forms which contain both similar items of information and items unique to each project. For most of this chapter, the forms used at the Barrio Clinic are used to illustrate the system.

The information content of the system, exclusive of developmental screening, may be classified under four categories: family information, child history, screening findings, and problem definition. This information is captured on the five forms provided in Appendix A. The precise nature of the data called for may be determined by examination of each of the forms. The following provides a brief overview of the forms and how they are used.

Family Information Sheet: This form is completed for each family at the first contact, usually in the home at the time of a visit by an outreach worker. As can be seen from the forms, it captures basic socio-demographic information on the family, and the mother's evaluation of her own health status. Each family is identified with a unique number, with a two-digit suffix for identifying each child in a family.

Child Health Questionnaire: This form is also initiated by outreach workers at the time of the first contact with a family. The form serves as the child's medical history record for the clinic, and thus contains a greater number of informational items than are called for by the Common Data Base.

The Screening Sheet: This form is completed at the time of screening. Screening steps 01* (measurements) through 07 are completed first by a nurse or an aide working under the supervision of a nurse. Customarily, step 08 (Denver Developmental) is completed by the community aide (outreach worker) at the time of the home visit.

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*These two-digit numbers refer to line numbers on the screening sheet where results of each screening step are recorded.

Steps 09 through 19 are done by a physician or a pediatric nurse practitioner following completion of the earlier steps. Other items of information also reported by all projects include:

1. An indication as to whether a screening step is required for a child given its age and health care status.

2. Identification of what staff person conducted each screening step.

3. If a screening step is not completed, the reason for not completing it is indicated.

4. A healthiness rating made by the person giving the unclothed physical examination. This is a nine item scale ranging from 1 (very poor health) to 9 (very healthy).

5. A description of the immunization status of the child at the time of screening and its status if immunizations are provided at the time of screening.

Problem Definition Sheet: The system calls for a description (definition) of each problem detected for each child. This is obtained from the upper half of the Screening Sheet (Appendix A-3) and the Problem Sheet (Appendix A-4). As examination of the two forms shows, each problem is described as to whether it is acute or chronic, symptomatic or asymptomatic, previously known to the child's mother and under treatment, and whether it is referred by the screening agency to a provider for diagnosis and/or treatment. In addition to these, each problem detected by physical examination is rated by the examiner as to its seriousness on a five point scale ranging from mild to severe. This information is transferred by clerks to the Problem Definition Sheet (Appendix A-5), and forwarded to HSRI for computer processing.

Each child given a physical examination, regardless of whether problems are detected by any screening step, is rated by the person giving the physical examination on a nine point Healthiness Rating scale (See Appendix A-3).

Problem Resolution

A key feature of the system is a follow-up mechanism intended as a managerial tool to assure follow-up on all conditions detected and not resolved at the time of screening.* HSRI, based on data from the Problem

*Some agencies treat and correct some conditions at the screening site; for example, ears impacted with wax, immunization completion, head lice, etc.

Definition Sheet, has its computer print periodically on IBM cards each problem shown as unresolved on the Problem Definition Sheet. These cards containing the child's name and description of its problem are returned to the agency as a follow-up reminder. (The card is shown in Appendix B.) Upon receipt of the cards, if the system is operating effectively, the agency reviews the child's case, takes whatever action is indicated or possible, and indicates the results of the action on the card and returns it to HSRI. In addition to the card system, each agency is periodically provided a management roster in the form of a computer printout identifying each child, its problem(s), and the status of each problem with respect to follow-up outcome.

Appendix C contains a copy of the Problem Sheet of the Contra Costa project. This form reflects a second method of describing problems found, the referral procedure for diagnosis and/or treatment, and the follow-up procedure. After a problem is defined for a child, the upper part of this five-part mailer form is completed. The first copy is sent to HSRI. The second, third and fourth sheets are retained by the screening agency, and the remainder of the form is taken by the child's mother to the physician to whom the child is referred. After seeing the child, the physician completes all but the last third of the form and mails it to the referring agency at the time of referral.

The Problem Card, shown in Appendix B, was used during this reporting period, but outcome categories provided under part A of the card did not adequately capture what happens to EPSDT children. Thus, a new Problem Card will be implemented September 30, 1975. The revised card is shown in Appendix D. Side one calls for the results of retests conducted subsequent to screening; and side two of the card provides a set of categories for describing the status of the problem identified by the card. Systematic use of this system should

give a precise account of what happens to problems during the case-monitoring process.

The Computer Tape Files

The following description is provided for those readers who may be interested in some broad details of the computer system and data processing. The current system of computer files consists of four separate files containing: 1) the family history, 2) screening data, 3) problem data, and 4) child history. The first three files are keyed to the child's history file which also serves as a master file for accessing the other three. Separate files for various statistical analysis can be produced from this system. Appendix E is a schematic of the system. Appendix F contains the information contained in the fixed-length record master file that was used during processing for the report period of this report.

The processing and entry of the data into the system proceeds as follows:

1. The records arriving at HSRI are recorded and stamped, showing date of arrival.

2. The data records are examined by the data control supervisor for gross errors.

3. The records are then coded (usually by medical students) for keypunching.

4. A computer edit is run on each batch of records after coding and punching. Errors detected by editing are checked and corrected. Cards for each edited batch are stored until the monthly "processing cycle".

5. The four files are kept off-line on magnetic tape. New and additional data are entered into the files during the processing cycle. The first step in this process is to enter the data on random access storage discs. From this point the processing proceeds as follows: The new data entered into each of the four files is checked against existing files. If errors occur, the record is rejected and processed during the next cycle. Statistical analysis is made possible because the four files are combined to form a fixed length file for each child

similar to the one shown in Appendix F. Then SPSS (Statistical Package for Social Sciences) can be used to analyze contents of the file.

Common Data Base Outputs

From a system with such a large number of variables, the variety of data analyses possible is large. For present purposes two orders of output are of primary interest. The first are those outputs more or less immediately useful to the ongoing management of an EPSDT program. The second sort of outputs are data analyses which, although eventually managerially significant, reveal finer dimensions of EPSDT outcomes. These should be useful for policy makers and high levels of program management. These sorts of outputs may be briefly described as follows:

Management outputs: In addition to its capability of providing the projects' summarized information on the number of children screened, conditions found, etc., the system is now capable of providing each project with periodic (monthly is anticipated) information useful for immediate managerial purposes, especially in the area of follow-up and case monitoring. These are principally as follows:

1. A computer printout cross-reference of names and identification numbers for each child ever screened is provided. This listing aids the agency in facilitating access to its own files, but its most vital use is to assume that children, particularly those having retests and periodic screens, are not assigned new identification numbers. By using the same identification number, the computer system adds all additional information to each child's file, thus providing a cumulative record for the relevant portions of the EPSDT experience.

2. A second printout gives the name, identification number, date of birth, and date of last screen by month for each child. This printout includes all children screened over the preceeding six-month period, i.e., children screened in the first month of the last six-month printout are deleted and those screened in the last month of the current period are added. This printout serves several purposes: (a) it identifies for each project all the children reported as screened and now contained in the computer files; (b) it identifies

by name all children screened in a given month; and (c) the most important use is for determining those children in need of periodic screening according to each agency's periodicity schedule. For example, an agency employing a periodicity cycle of 12 months can examine the history of children screened one year earlier, compare this with lists of eligibles to identify children who are still eligible, and then notify mothers of the need for a periodic screen.

3. The system allows a 20-character verbal description of each problem detected by screening. The third printout is a listing of the verbal description of problems in need of follow-up and outcome (resolution) status. The list includes name, identification number, and screening date. The problems are ordered by screening date with the most distant dates listed first. This document is principally useful for maintaining and assuring systematic follow up.

4. The fourth listing gives the verbal description of each problem detected during the previous six months under 40 diagnostic categories based on groupings of the International Classification of Disease (ICDA) codes. This output gives the agency a gross but continuous overview of the type of problems identified by its screening effort for establishing follow-up priorities, and for identification of children in need of special attention. As an example of the latter, one project identified children with anemia and held special classes for their mothers, and organized classes for obese children.

Data Analysis Outputs: One anticipated use of the system is to be able to make both cross sectional and time series comparisons of the EPSDT activities and outcomes. Some examples are comparisons of rates of positive findings by screening step, by type and seriousness of conditions detected by screening, and by such characteristics as age, ethnicity and locale. Similar comparisons over time, i.e., as between the first screen and subsequent (periodic) screens, are also possible. Another potential of the system is the possibility of predicting which children are most in need of screening on the basis of such variables as previous utilization of health services, length of time on Medicaid, source of medical care payments for non-Medicaid children, number of siblings, age and education of mothers, and mothers' assessment of their children's health status. Other possibilities may be enumerated without implications as to order of importance. For example:

1. Rates of positive findings by age, sex, and ethnicity.

2. Rates of positive findings by type and severity of condition.

3. Type, severity, and "newness" (i.e., previously unknown to child's mother) of conditions by previous levels of health care utilization.

4. Type, severity and newness of problems for Medicaid eligible or non-Medicaid eligible children at similar socioeconomic levels.

5. Immunization levels among children at the time of first screen and subsequent (periodic) screens.

6. Comparisons of type and severity of conditions found between initial and periodic screens.

7. Changes in "healthiness" rating between initial and periodic screens.

8. Per capita screening, diagnostic and treatment costs and costs by condition found.

9. Outreach and follow-up costs.

10. Rates of false positives by skill level of screeners.

Developmental Data

Developmental assessment is a large component of the Cuba and NCDCA projects. No attempt has been made to fit these into a common format, but considerable resources have been used in computer analysis of data being fed to HSRI concerning the developmental assessment results. For example, the Cuba diagnostic test summaries require 17 cards each. A chapter of this report discusses the developmental screening, and the data forms for Cuba and NCDCA are given in Appendices G and H, respectively. Examination of these forms give a fairly clear notion as to what information and measures are captured by the developmental programs of these two projects.

Persons interested in more details about the data system are invited to write HSRI.

CHAPTER 4

DEFINING ABNORMALITIES, VALIDITY AND RELIABILITY AND ESTIMATING PREVALENCE FROM SCREENING FINDINGS

A task of great importance for arriving at some degree of comparability among the findings of the four projects was to attain a working degree of commonality among them with regard to criteria or norms for defining abnormal or positive findings. This chapter outlines the criteria used by the four projects for the screening steps or elements common to all four projects. In addition, the problems of validity and reliability of measurement and reporting are considered, as are the problems of estimating prevalence of conditions since the following chapter presents selected screening findings from the four programs.

Criteria of Abnormality

The measures (tests and observations) employed for detecting the presence of disease or dysfunctions in the various bodily systems are referred to as elements or steps which, collectively, are referred to as a screen or screening battery. The screening batteries of the four projects are quite similar, but some differences do exist. The principal elements of the screening batteries and the definition of what constitutes positive (abnormal) screening findings in the four projects may be outlined as follows:

1. Hearing: The Barrio Clinic tests for hearing difficulties with the VASC audiometer and employs readings of 19 decibels or greater for positive findings; the other projects employ readings above 20 decibels (ASA calibration). Besides audiometer(screening) NCDCA also uses the Acoustic Impedance meter for impedance screening.

2. Vision: Pass-fail criteria are 20/50 and 20/40 for preschool and school age children, respectively, for the Barrio Clinic and Contra Costa County; Contra Costa employs 20/50 vision for one eye or 20/40 in both as indicative of a positive finding; NCDCA with a large proportion of children under six years of age (55%) employs 20/40 for both eyes as a positive finding.

3. Blood: All four projects use the hematocrit, and all but NCDCA, which uses 30 per cent, employ the value of 33 per cent or below as a positive finding. Contra Costa and NCDCA make hemoglobin determinations -- for this, values below 11 gm/100 ml or 15 or higher are taken as a positive finding.

4. Urine: The Bili-Labstix is used by all four projects for checking the pH value of the urine and the presence of protein, glucose ketones, bilirubin, and blood. A pH value of seven or greater and readings indicating the presence of any of the above substances in the urine are defined as positive screening findings. If blood is present in any child's urine, the child is immediately referred for diagnosis and treatment; otherwise, a urine sample is taken and subjected to laboratory analysis.

5. Tuberculosis: The Tine test is used by all four projects with abnormal responses defined as at least one swollen papule of 2 mm. Contra Costa and Cuba also use the Mantoux test and papules of 5 mm. as a retest.

6. Other Tests: Two of the projects, Contra Costa and NCDCA, screen for sickle cell anemia and lead; a test for veneral disease is also done for children 12 years of age and older by both of these projects. Contra Costa includes a test for PKU (phenylketonuria), and Cuba gives special attention for signs of trachoma at the time of the physical examination. * Contra Costa also checks for this, but due to better hygiene among the target population, it is not generally found.

7. Medical (physical) examination: All children, with rare exceptions, receive unclothed examinations. These examinations are essentially rapid systems review including head, neck, eyes, ears, throat, lungs, heart, abdomen, genitalia, extremities, and skin. However, all the projects do not require examination of all of these areas.

The following chart outlines the tests and gives the critical values employed for defining positive screening findings for blood, urine, tuberculosis, hearing and vision:

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*Clinical experience of the Checkerboard Area Health System has shown a relatively high incidence of trachoma in the Cuba area, thus particular attention has been given to screening for this condition.

PROJECT	HEMATOCRIT[a] Value (%)	HEMOGLOBIN gm/100 ml	URINE[d]	TUBERCULOSIS	HEARING	VISION
Barrio	33 Or Below		Dip Stick (Positives Retested)	Tine (Swelling 2mm)	Above 19 Decibels[b]	20/50 Pre-school 20/40 School Age
Contra Costa	33 Or Below	11[a] or lower 15[a] or higher	Dip Stick (Positives Retested)	Tine (Swelling 2mm)	Above 20 decibels[c]	20/50 Pre-School 20/40 School Age
Cuba, N.M.	33 Or Below		Dip Stick (Positives Retested	Tine (Swelling 2mm)	Above 20 decibels[c]	20/50 in one eye 20/40 in both eyes
NCDCA	30 Or Below	11[a] or lower 15[a] or higher	Dip Stick (Positives Retested)	Tine (Swelling 2mm)	Above 20 decibels[c]	20/40 in both eyes

a) The values depend upon the age of the child.
b) VASC Audiometer
c) American Standard Audiometry calibration - Pure tone
d) Established standards

All those health conditions identified and reported by the projects are variously referred to in this reported as "suspected", "detected", or "abnormal" problems or more generally as "positive" findings. Difficulties have been encountered in using the adjective "positive" with reference to screening findings. These arise from the view that a screening finding is only a "suspected" problem until confirmed by diagnosis and should be so designated until diagnosis is made. This is correct in one sense; however, it frequently happens, particularly in the case of the Barrio and Cuba projects, that the screening, diagnostic and treatment acts become a single, almost simultaneous act. For example, head lice or other equally obvious conditions are detected, identified (diagnosed), and treated on the spot. Thus, in what follows, it should be kept in mind that any mention of screening findings, unless otherwise noted, refers to all those problems identified by a screen regardless of whether it has been confirmed by diagnosis.

Another source of difficulty is the confusion arising in the mind of

some when the adjective "positive" is employed to refer to screening findings indicating the possible existence of health problems.* In spite of this possible source of confusion for some, it is convenient to speak of positive and negative findings. Where screening findings are not confirmed by subsequent diagnosis, we may speak of false positives and, conversely, if closer examination reveals a problem where screening did not, we have false negatives. Finally, it may be noted, the EPSDT process has a fortuitously built-in check on false positives for those children who receive diagnostic attention following positive screening findings. Thus, the diagnostic subsystem constitutes a check upon screening accuracy, but only for those children who receive this service.

Validity and Reliability

The matter of false positives and false negatives leads rather naturally to questions of validity and reliability of the screening instruments and procedures. These notions are captured in the questions: Do the instruments (observations) measure what they are said to measure? And, do they perform in the same manner upon repeated application? For example, is a positive reaction to tuberculin testing invariably indicative of the presence of the tubercle bacillus, and does it give, within acceptable limits, essentially the same indications upon repetition? For this evaluation, it has been assumed that the screening methods and tests by the projects have at least a minimally satisfactory degree of validity and reliability.

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*The word "positive" signifies "good" (no problems), while the word "negative" signifies the presence of a problem.

In addition to the reliability of the screening instruments is the matter of the reliability of screeners, i.e., the human instruments. Does the same person perform essentially in the same manner from person to person and from time to time, e.g., in judging or measuring the size papules produced by tuberculin testing? This is the question of intrascreener reliability. There are also questions concerning the reliability of screens administered by persons with different levels of knowledge, skill, and experience. Can indigenous, non-professional workers be trained to make adequately valid and reliable screening observations? How does performance of such workers compare, say, with that of nurse practitioners, physician's assistants and physicians? More generally, what are the differences in screening performance among the various levels of health personnel? These are important considerations which have not been dealt with systematically by these evaluation efforts.

A final issue related to quality of the data and findings has to do with the process of recording and reporting information on all facets of the EPSDT process: case finding, screening, diagnosis, treatment, and follow-up. Weeks, or at times months, may pass between the first case finding contact with a family and the resolution of a condition found by screening. Passage of time, inefficient record keeping, personnel turnover, and difficulties in follow-up increase the probability of errors. Much effort has been put forth by the projects in cooperation with HSRI to reduce such measurement and reporting errors which so easily occur. This is not to say that all errors and inaccuracies have been found and corrected. Unfortunately, there is no way of estimating the exact nature of what inaccuracies may exist. On the basis of observations and experience with EPSDT data from numerous programs around the nation, we judge the data produced by these projects as being well above average.

To what extent do screening findings presented in this report represent the true prevalence or actual number of conditions present in a population at a given time? The following discussion addresses itself to this question in a preliminary fashion and suggests one approach for using screening findings for estimating prevalence of the various conditions identified by screening.

If screening instruments were completely valid and reliable and properly applied and reported accurately, screening findings would accurately represent prevalence for the populations screened. Such conditions do not hold for any program for errors can and do enter from any number of sources. In the general case, these errors appear as false positives and false negatives; that is, screening indicates a problem where none exists or fails to detect a problem where one does exist. Thus, the occurrence and magnitude of such errors do not allow a direct equating of screening rates with prevalence rates. This could be done if it were assumed that false positives and false negatives occur in equal proportions. No basis for such an assumption is known. Although it may be argued that screening programs should err on the conservative side; that is, be willing to accept higher false positive rates than higher false negative, a number of factors must be taken into account in deciding the balance to be struck between the two. Such factors include the seriousness of undetected conditions, the cost of treatment versus the cost of not treating, and whether treatment is available, and so on.

To use screening findings for estimating prevalence of medical, dental and developmental conditions in the group of children screened, it is necessary to adjust the rate for the false negatives and positives, but it must be recognized that the children reported on in this report may not

be representative of the general U.S. population of low income children. As noted previously, EPSDT has a built-in check on false positives for those children who receive diagnostic examinations as a result of screening, but no such check on false negatives. False negatives cannot be adjusted for without special quality control screening; however, if screening procedures tend to follow a conservative approach, false positive rates should be larger than false negatives and, therefore, first in order for use as a corrective factor.

An adjustment for false positives can be made in a relatively straightforward manner by use of the proportion of false positives which appear upon diagnosis and/or treatment.* The calculations are as follows:

$$(1)\quad EFP = \frac{FP}{DR} \times PS$$

$$(2)\quad EP = \frac{PS - EFP}{SC} \times 1{,}000$$

Where: EFP = Estimated number of false positives in a series of screened cases

FP = Number of false positives determined by diagnosis

DR = Number of diagnostic decisions reported by providers including false positives

PS = Number of cases positive on screen

EP = Estimated prevalence rate adjusted for false positives

SC = Number of cases screened for a given condition

Estimating the number of false positives (EFP) by equation (1) is necessary in using EPSDT data because all providers do not always return reports of their diagnostic findings to screening agencies. This, of

*Here it is assumed that providers to whom children are screened do not treat unless a problem exists; and, moreover, reports this fact to the referring screening agency.

course, is also another source of error which could be reduced or eliminated by various means. Such effort would be useful for research but the cost may be too excessive for requiring it as a standard part of EPSDT operating procedure.

The estimating procedure may be illustrated by use of vision screening findings and diagnostic outcomes from the four projects. Some 4,764 children received a vision screen which resulted in 399 positive cases (8.4%), or a rate of 83.8 per 1,000 screened. Of these, 220 children were referred and diagnosed as reported to the HSRI data system, and 40 were reported as false positives. Using these numbers in the above formulas to adjust for the false positives we have:

(1) $EFP = \frac{40}{220} \times 399$

$= 72.5$

(2) $EP = \frac{399 - 72.5}{4,764} \times 1,000$

$= 68.5$ per 1,000

Thus the adjustment for false positives on vision screening reduces the rate of positives from 83.8 per 1,000 to 68.5 or by about 18 per cent.

This adjustment has not been applied to the screening finding for the four projects, individually or collectively, for several reasons: (1) prevalence rates based on these findings would have little general significance since it is not known to what extent the children in any of the projects represent the population from which they come; (2) at the time of data analysis, sufficient time had not passed for receipt of diagnostic information on the most recently screened cases; and (3) reports back to the projects on diagnostic outcomes vary sufficiently among the projects as to make comparisons uncertain.

CHAPTER 5

SELECTED SCREENING FINDINGS

Selected findings drawn from the screening reports of the four projects are provided in this chapter. In addition to number and age of children screened the findings included here are: (1) the number of children needing and receiving each screening step; (2) the number of problems found; (3) the ten most frequent conditions detected by screening; (4) the history and treatment status of problems detected, i.e., how many were previously known and treated; (5) the distribution of the problems as to whether chronic or acute; and (6) the immunization status of the children at the time they were screened. Developmental screening results from the Barrio, Cuba, and NCDCA projects follow in the next chapter.

Number Screened

The period of screening covered in this report extends from April 1, 1974 through March 31 of 1975 for the Barrio Clinic and Contra Costa projects. The data on NCDCA project includes children screened in the first quarter of 1974; and, since Cuba did not begin medical screening until September 1974, the data on this part of the project's work extends from that date.

During the reporting period for the projects a total of 9,198 children were screened. These were distributed among the four projects as follows:

Program	Number	Per Cent of Total Screened
Barrio	2,974	32.3
Contra Costa	3,861	42.0
Cuba	1,211	13.2
NCDCA	1,152	12.5
TOTAL	9,198	

Number On Which Findings Are Reported

For various reasons, principally reporting lags in the last two months of the report period, only 7,426 screening records were in the computer files at the time the anlysis had to be made for this report. Thus, with a few exceptions to be noted from time to time, the findings given in the report cover 80.7 per cent of all the children screened in the reporting period. Comparisons of the percentages in the following table with those immediately above indicate that the cases available for this report closely approximate the proportion of each project's contribution to the total number of children screened.

Program	Number	Per Cent of Total Screened
Barrio	2,388	32.2
Contra Costa	3,280	44.1
Cuba	729	9.8
NCDCA	1,029	13.9
TOTAL	7,426	

Age Distribution

The age distribution of the children whose screening findings are given in this report was as follows:

Age	Barrio (N=2,388)	Contra Costa (N=3,280)	Cuba (N=729)	NCDCA (N=1,029)
0-4	43.0	47.5	10.8	34.4
5-11	45.0	30.3	87.5	58.6
12+	12.0	22.2	1.7	6.0

This distribution is shown graphically in Figure 1. The differences among the projects generally reflect the target population of each. NCDCA is targeted on a day care population and some after school care, thus it has relatively few older children. Cuba's program is focused on preschool through children in the third grade. The small proportion of older children in its population

reflects their presence in the earlier grades. Both the Barrio and Contra Costa projects serve all ages which is reflected in the age distributions. Since older children tend to be less easily gotten in for screening*, the fact that more than a fifth of Contra Costa's children were in the older group is encouraging.

Children Needing and Receiving Each Screening Step

The projects attempt to determine whether each child is in need of each screening step based upon project requirements and previous child history and age before subjecting it to the screen. Table 1 gives the percentage of all the children in each project who were, according to reports of mothers and/or available records, in need of a screen on each of the indicated steps. In each instance over 90 per cent of the children were in need of a blood and urine screen. Fewer were in need of a tuberculosis screening; only 35 and 51 per cent of the Barrio** and Contra Costa children, respectively, required tuberculosis testing; however, more than 85 per cent of the Cuba and NCDCA children required this test. A similar pattern held for vision and hearing: approximately 65 per cent of the Barrio and Contra Costa children needed these steps; in contrast, about 95 per cent of the Cuba and NCDCA children were in need of vision and hearing testing. (This difference is due primarily to the different age distributions.) Those in need of a dental screen ranged from a low of 82 per cent among Contra Costa children to 100 per cent for the Barrio and Cuba children. Essentially all

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*Recent experience with a non-EPSDT screening project working with 12 to 18 year old youth indicate that youth of these ages resent being subjected to a screening along with children. Other observations also suggest that screening personnel much prefer to work with young children.

**Since the Barrio follows the practice of not giving the test unless it can be documented that a child has not been recently tested, the number reported in "need" of a test is probably too low.

of the children were in need of a physical examination.

Table 2 gives the number of children of all ages for each project needing each screening step and the percentage getting it. (Tables 3 through 5 provide the same information by age groups.) From Table 2 it can be seen that the projects were generally successful in attaining a high rate of completions on each screening step. No project had more than two per cent of the children who did not get a physical examination. Essentially all the Barrio children and the Contra Costa children were examined for dental conditions; however, in the case of the Barrio, the screen was done by the physicians performing the physical examination, and by nurses and physicians in Contra Costa. In Cuba, where all but 8 per cent of the children were screened, the dental examination was performed by a dental hygienist. About 28 per cent of the NCDCA children did not receive a dental screen. This relatively large percentage resulted from absenteeism on those days when children were transported to off-site locations for screening by dentists. Around 85 to better than 90 per cent of the children in need of hearing and vision screening were tested.

Examination of Tables 3 through 5 in conjunction with Table 2 shows that the highest failure rates were among the younger (0-4 years) children for hearing, vision and urine testing. Since these screens are to a great extent dependent upon the cooperation of the child, failure in administering a screen to the younger children is not surprising.

The rate of failure to receive a needed screen was highest among NCDCA children, and the positive relationship between age and percentage of children screened was reversed. For example, about 60 per cent of all the children needing a screen for tuberculosis got it; however, almost 74 per cent of those four years of age and under were tested as compared with only 43 per cent of

those 12 and over. The inverse relationship between age and rates of receiving a screen held for all seven screening steps among NCDCA children. The reason for this is not clear unless greater difficulties are encountered in organizing screening step completion for the older children.

These results indicate that all the projects are approaching or exceeding a success rate of 90 per cent in screening children in need of a given screening step. Secondly, the lower rates and the inverse relationship between age and screening rates for NCDCA indicates that the project is coping with different conditions. One factor has been that in the early period of the project's existence its screening was a segmented process over time rather than a total screen at one time. This coupled with absenteeism no doubt reduced the rate of screening steps completed. Changes in the screening procedures planned for 1975-1976 should overcome these problems.

Number of Problems Found

The following table shows the total number of problems reported for the children and the average number of problems per child:

Program	Number Of Problems	Average Number Per Child
Barrio	2,023	0.85
Contra Costa	2,031	0.61
Cuba	907	1.24
NCDCA	396	0.38

The Contra Costa figures are estimates based on the projects experience in April and May of 1975. Confusion in reporting procedures for the earlier months necessitated this estimation procedure.

The above averages clearly suggest that the Cuba children have more health problems than those in the other projects, and that NCDCA children have far fewer problems. The average number of problems for only those children with

one or more problems for all but Contra Costa are:

Barrio	1.6
Cuba	1.8
NCDCA	1.2

These averages do not change the relative position of the rate of problems and confirm the fact that health problems tend to come together.

Table 6 which gives the distribution of positive findings by age groups, shows almost 55 per cent (54.4%) of the total Barrio children to have had problems detected by screening. In contrast, only one-third (31.8%) of the NCDCA children had problems which contrasts even more sharply with the fact that over two-thirds (68.7%) of the Cuba children had positive findings. Put differently, only one-third of the Cuba children had no problems detected by screening, just under half of the Barrio children had negative findings while more than two-thirds of the NCDCA children had no problems detected by screening. What would happen to these proportions and their rank order by project if the screening findings could be corrected for false negatives and positives is not possible to estimate without more precise study and controls. It is of interest to note, however, that the general availability and accessibility of health services tend to increase as one moves from the Cuba to the Barrio to the NCDCA environments.

Age data as given in Table 6 are insufficiently complete for drawing conclusions as to relationships between age and number of problems. The Barrio data which are most complete for age suggest that the number of problems tends to increase with age; however, the Cuba data which are less complete at this time suggest the opposite with the largest differences occurring with genitourinary and dental conditions. The relationship warrants careful study which includes individuals well beyond 12 to 13 years of age to determine what happens with the passage from childhood to young adulthood in

different populations under different patterns of health care and utilizations.

Findings by Screening Step

The number of children screened by each screening step and the per cent having positive findings are shown for children of all ages by project in Table 7. (The same data are given by age groups in Tables 8 through 10.) It should be pointed out that the percentages for Contra Costa are estimates based on the project's experience during April and May of 1975*.

The most general description applicable on the results in Table 7 is that there are greater differences than similarities among the projects with respect to positive findings by screening step. Some comments by step may be useful.

Blood: These findings are predominantly iron deficiency anemias. Contra Costa was high with a rate of 17 per cent; the Barrio and NCDCA had identical results--12 per cent; Cuba had a rate of only 2.4 per cent. The reason for Cuba's low rate could be a result of dietary patterns in this rural area, but this is only speculation.

Urine: The rates for NCDCA and Contra Costa ranged from 0.2 to 0.6 per cent; Cuba's rate was 5 per cent, and the Barrio at 12 per cent. One small effort at retesting Barrio urine findings indicates a high level of false positives on this step for the Barrio**.

Tuberculosis: Findings ranged from no positive cases in Contra Costa to 1.9% for Cuba. However, later analyses of the data revealed that 2 cases of TB were found during this time, but the forms had not been processed.

Hearing: Contra Costa and NCDCA rates were essentially identical (6 and 7%) aswere Cuba and the Barrio (10 and 12%).

Vision: Contra Costa and Cuba vision findings were similar (16 and 24 per cent) as were those of the Barrio and NCDCA (8 and 9 per cent).

Dental: Except for the Barrio, the rate of dental findings was around 30 per cent (28 to 32%), the Barrio rate was only 18 per cent.

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*The necessity for this resulted from confusion regarding reporting procedure for positive findings.

**A small study conducted by the clinic made rescreen appointments for 13 of the 49 children having positive urines on testing during January-March of 1975. Six of the 13 kept the appointment, and none were positive by retest findings.

Physical: The physical examination produced near identical findings in Cuba and the Barrio (42 and 45%), and similar rates occurred for NCDCA and Contra Costa (8 and 11%). The lower rates for the latter projects could be a result of greater availability and utilization of health services as compared with Cuba and the Barrio.

Examination of Tables 8 through 10 shows differences by age groups. Some of these may be noted as follows: anemia (blood) rates tended to be higher in the 0-4 year group except for Contra Costa where rates were about equally distributed over the three age groups. Hearing rates were also higher in the younger children, except for NCDCA, where the proportion for older children was twice that of the younger. This may be due to the high rate of upper respiratory infections also noted in the population. In Cuba, almost 40 per cent of the younger children had a positive vision finding; and although not as high as Cuba, the younger Barrio children had the highest rate of vision findings (16.4%). The pattern was reversed in fact for Contra Costa and NCDCA: the proportion of older children in the latter program was almost three times that of those in the two younger groups, and in Contra Costa the rate for children in the two older groups was about four times that of the younger group. Dental problems showed a clear, but not fully consistent, positive relationship to age. The pattern was most evident among NCDCA children where the percentage of children with dental findings were 27, 38 and 46 per cent, respectively, for the younger, middle, and older age groups. In Cuba, 47 per cent of the children under five had positive dental findings, a rate twice that of younger children in Contra Costa and almost eight times that of the Barrio children. Findings from the physical examination were essentially equally distributed over the three age groups; however, the rate of positive findings for the Barrio and Cuba was three to four times greater than that for NCDCA and Contra Costa. It is not yet known whether these results are due to better diagnosis, higher prevalence, the background of

the screener, or the reporting system. As the data base grows some of these questions can be asked.

These few rather detailed comparisons are described to make somewhat more obvious some of the differences and similarities among the projects and to see what patterns might emerge between age and findings under each screening step. Comparisons such as these made possible by the tables should be of interest and some use to the projects. Although the projects and their populations differ, comparative data can generate questions about results from a given screening operation and sharpen awareness about the distribution of conditions within its population.

Ten Most Frequent Conditions

Another way of looking at the findings is to ask what are the most frequent conditions detected by screening. Table 11 gives the 10 most frequent conditions and their rank order for the Barrio, Contra Costa, and NCDCA.* The classification of conditions, it will be noted, does not contain a unitary or a single axis, i.e., it contains specific disease entities as well as categories of related conditions.

As Table 11 shows, dental problems and anemia were first and second for all three projects with dental problems being about twice greater in number for in each project. Genitourinary problems which were third for the Barrio were in last place for the other projects; and pinworms, in fourth place for the Barrio, did not appear among the top problems of NCDCA and Contra Costa. Hearing loss, fourth and fifth for Contra Costa and the Barrio, did not show for NCDCA. Otitis media was third in order for Contra Costa and

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*Cuba data not sufficiently reported at the time of analysis for inclusion.

NCDCA and sixth for the Barrio. Dermatological and upper respiratory findings were relatively closely ranked, but infections and parasitic problems which were tenth for the Barrio did not appear in the top conditions for the others. Orthopedic conditions, which did not appear for the Barrio in the top ten was fifth for Contra Costa and competed for tenth place with genitourinary problems (three cases each) for NCDCA. Heart and circulatory conditions which ranked 7.5 for Contra Costa and NCDCA did not show for the Barrio. Two conditions, not in the top ten for the other projects and ranked fifth and ninth for NCDCA, were conditions resulting from injuries (5th) and speech problems (9th).

Such rankings leave little doubt about the generally high prevalence of dental conditions, anemia, and vision problems. Otitis media and hearing loss, if combined into one category, would pass for third place. Beyond these conditions of high frequency, differences arise in findings which reflect particular interest of a screening program, problems with screening procedures, or conditions considered worth reporting. For example, the Barrio has given particular attention to pinworms while the other projects give little systematic attention to them. This would be due to the prevalence of the condition in each community. The Barrio also reports a large number of positive genitourinary findings. As noted elsewhere, there appears to be a large number of false positives among these findings which suggest either an overly conservative approach or difficulty in the screening procedure. A somewhat similar uncertainty arises around dermatological problems in Contra Costa. Screeners noted well over 800 such conditions but referred only 24 cases for treatment since they are hard to diagnose. Had these

800 been included in Table 11, they would have placed first for Contra Costa.* Observations of findings internal to a program, and comparatively with others, raise a wide range of questions having operational and policy relevance. For example, given the problems of treating pinworms and their consequence for the health of a child, what policy and procedures are best followed with regard to this condition?

Problem History and Treatment Status

In all projects, except Cuba where mothers are generally not available at the screening, attempts are made to determine from mothers and available medical records the history of each problem identified by screening. That is, was it previously known and under treatment? The results of this effort are given in Table 12. The last column of the table indicates that approximately one-third of the total problems were previously known but had not received treatment. The second column from the right shows that four to eight per cent of the problems detected by screens for the Barrio and Contra Costa children were previously known and had received treatment. For Cuba and NCDCA children, about 15 per cent of the total problems were previously known and treated. The prime finding is that three-fifths (62.5%) to four-fifths (78.5%) of the problems were previously unknown.

Acute and Chronic Problems

The physician or nurse detecting a problem at the time of screening or later by a diagnostician indicate whether it is, in their opinion, an acute

*Since the 24 dermatological problems referred for treatment exceeded in frequency some other conditions they were included in the ranking of the top ten conditions for Contra Costa.

or chronic condition. Table 13 displays the results for the three projects classifying the conditions in these terms. In the Barrio, some 1,639 (80%) of its 2,023 problems had been adjudged as either acute or chronic. Of that number 80 per cent were judged chronic and 20 per cent acute. Only 16 per cent of the Contra Costa and less than 10 per cent of the Cuba problems were diagnosed and reported by the time of the data analysis; however, as part A of Table 13 shows, the percentage classified as chronic and acute by the two projects were within 6 to 12 points of those of the Barrio. The higher per cent acute in Contra Costa is probably due to the greater likelihood of acute cases getting rapid care because the nature of the outreach effort and clinic orientation should tend to exclude the acute care cases.

Examination of the percentage distribution of chronic problem by age in Table 13 indicates a clear relationship between age and chronicity. For example, 80 per cent of the problems for all Barrio children were identified as chronic. This seemed to hold true even after deleting the dental conditions. This percentage drops to 70 per cent for children 0-4 years, but rises to 85 per cent for both older age groups. A similar but sharper pattern emerges for Contra Costa: 45 percent of the problems among children 0-4 years were chronic; for 5-11 years, the percentage was 74 per cent, and for those 12 and above, the percentage is 88. Fifty of the 52 Cuba problems were among 5-11 year olds, and 88 per cent of these were chronic.

Since the Barrio is the only project adequately represented in Table 13, the results must be described as preliminary. However, that chronicity of problems should increase with age does not seem unreasonable. For the Barrio this is principally accounted for by the fact that dental problems which are generally most prevalent are classified as chronic.

Immunization Status

All the projects make specific effort to determine the immunologic status of each child screened. If a child is not current (up-to-date), steps are taken to provide immunization according to its needs. Before going to the findings, the approach of each of the projects should be described briefly. The Barrio provides immunization at the time only for those children with records in possession of their mothers which indicate that immunizations are incomplete or out-of-date. Before immunizations are provided to the child without records, an attempt is made to obtain a copy of its record if immunized by the health department or schools. Contra Costa uses both records and verbal reports by mothers to determine the immunization status of children; if either or both sources indicate a need for immunization, they are provided. NCDCA generally follows the same procedure as that of Contra Costa. Determining the immunization status of the Cuba children is complicated by the unavailability of mothers and the fact that many have been immunized by the schools but other records are unavailable, (i.e., Public Health nurse, clinic records, including hospital and outpost clinics), and so scattered that there is virtually no way of locating them. The Cuba project, in cooperation with HSRI, is devising an immunization record for each child to avoid or reduce over-immunization.

Table 14 and Figure 2 display the immunization levels of the children in the four projects as determined at the time of screening. Several points may be noted. Only the children in Contra Costa attained or exceeded 75 per cent level of current immunizations. Barrio children were second, but barely exceed 55 per cent. The low per cent immunized was unexpected since there was a diptheria epidemic in 1970-71. Since the children in the NCDCA

represent urban children in the capital of the nation and since immunization is now required for entering the NCDCA school program, it is somewhat surprising to find that only slightly more than one-third are children whose immunization status was current.

About two-thirds of the Cuba children were current for measles and rubella, but two-fifths or fewer were current for DPT and polio, and none of the children, as far as could be determined, had been immunized for mumps. The lower immunization levels for polio and DPT stems primarily from the fact that the vaccines must be given in a series and, as yet, there are no programs in the area organized and funded to see that the services are completed. Vaccines for mumps are also not available to most of the children served by the project. Finally, although the levels of immunization among these 7,000 children could be appreciably improved, it is far above the 19 per cent reported by Vogt, et al* for some 9,000 children in Health Start programs. Given the relatively low cost of vaccines and ease of administration, low levels of immunization in certain segments of the population is a disturbing and serious matter.

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*Vogt, Leona; White, Thomas W.; Buchanan, Garth N,; Wholey, Joseph S.; and Zamoff, Richard B.; "Health Start: Final Report of the Evaluation of the Second Year Program," Publications Office, Urban Institutue, Washington, D.C., December, 1973.

TABLE 1. PERCENTAGE OF CHILDREN OF ALL AGES NEEDING EACH SCREENING STEP, BY PROJECT

	Barrio (2,388)[a]	Contra Costa (3,280)	Cuba (729)	NCDCA (1,029)
Blood	90.2	91.5	96.7	96.4
Urine	96.1	96.6	98.4	96.5
Tuberculosis	35.3	51.2	86.6	87.6
Hearing	68.4	64.4	98.4	94.0
Vision	67.6	63.6	98.9	94.9
Dental	99.4	82.0	100.0	90.4
Physical	100.0	98.8	100.0	96.7

a) Numbers in parentheses are the base for the percentages.

TABLE 2. CHILDREN OF ALL AGES NEEDING AND RECEIVING SPECIFIC SCREENING STEPS

Screening Step	Barrio Clinic Total Screened 2388		Contra Costa Total Screened 3280		Cuba, N.M. Total Screened 729[a]		NCDCA Total Screened 1029[b]	
	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving
Blood	2154	98.1	3002	95.4	705	94.9	992	82.9
Urine	2295	83.2	3168	80.2	717	96.1	993	83.7
Tuberculosis	843	98.0	1679	100.0	631	97.9	901	60.6
Hearing	1633	90.6	2111	92.6	717	92.9	967	87.2
Vision	1614	86.2	2085	88.8	721	91.3	977	88.2
Dental	2374	100.0	2689	99.4	729	91.9	930	72.2
Physical	2388	99.4	3242	99.6	729	100.0	995	98.5

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 3. CHILDREN AGES 0-4 NEEDING AND RECEIVING SPECIFIC SCREENING STEPS

Screening Step	Barrio Clinic Total Screened 717		Contra Costa Total Screened 1577		Cuba, N.M. Total Screened 79[a]		NCDCA Total Screened 350[b]	
	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving
Blood	572	96.3	1335	94.0	78	93.6	329	90.6
Urine	673	64.8	1477	67.4	79	75.9	334	88.9
Tuberculosis	220	99.6	600	100.0	79	96.2	287	73.9
Hearing	187	68.4	419	81.4	79	58.2	328	93.9
Vision	185	53.5	407	65.9	79	48.1	328	88.4
Dental	714	100.0	1031	99.4	79	94.9	302	75.9
Physical	717	99.6	1532	99.6	79	100.0	333	100.0

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 4. CHILDREN AGES 5-11 NEEDING AND RECEIVING SPECIFIC SCREENING STEPS

Screening Step	Barrio Clinic Total Screened 836		Contra Costa Total Screened 994		Cuba, N.M. Total Screened 638[a]		NCDCA Total Screened 603[b]	
	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving
Blood	818	98.5	969	95.5	626	95.0	590	81.9
Urine	836	91.2	974	90.8	637	98.6	584	82.9
Tuberculosis	350	97.7	599	100.0	551	98.2	540	60.4
Hearing	813	93.6	972	94.2	637	97.2	565	84.1
Vision	808	90.2	961	92.4	638	96.7	575	91.1
Dental	829	99.9	953	99.8	638	91.4	555	71.7
Physical	836	99.2	983	99.8	638	100.0	586	98.5

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 5. CHILDREN AGES 12+ AND ABOVE NEEDING AND RECEIVING SPECIFIC SCREENING STEPS

Screening Step	Barrio Clinic Total Screened 200		Contra Costa Total Screened 729		Cuba, N.M. Total Screened 12[a]		NCDCA Total Screened 62[b]	
	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving	Number Needing	Per Cent Receiving
Blood	193	96.4	698	98.0	1[c]	100.0	61	60.7
Urine	194	95.9	716	97.9	1	100.0	62	74.2
Tuberculosis	68	97.1	480	100.0	1	100.0	61	42.6
Hearing	192	96.9	720	96.8	1	100.0	61	80.3
Vision	191	96.3	716	97.1	4	75.0	61	68.9
Dental	196	100.0	705	99.0	12	100.0	61	63.9
Physical	200	98.0	725	99.3	1	100.0	62	91.9

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975
c) Cuba only gave dental screening to those few children over 12 as a policy due to the limited funds during this reporting time period for screening older children.

TABLE 6. NUMBER OF MEDICAL PROBLEMS AND MEDICAL AND DENTAL PROBLEMS COMBINED, BY PROGRAM AND AGE OF CHILDREN, IN CUMULATIVE PER CENTS

	Number Screened	Problem	None	1 or More	2 or More	3 or More
A. All Ages						
Barrio	2,388	Medical Only	48.8	51.2	19.2	6.1
		Medical & Dental	45.6	54.4	22.8	8.0
Cuba	729	Medical Only	41.3	58.7	26.2	8.8
		Medical & Dental	31.1	68.7	35.9	15.0
NCDCA[a]	1,029	Medical Only	76.7	23.3	4.1	1.0
		Medical & Dental	68.2	31.8	5.2	1.3
B. Ages 0 - 4						
Barrio	717	Medical Only	45.7	54.3	21.3	7.4
		Medical & Dental	44.5	55.5	23.3	8.4
Cuba	79	Medical Only	43.0	57.0	29.1	10.1
		Medical & Dental	26.6	73.4	43.0	19.0
C. Ages 5 - 11						
Barrio	836	Medical Only	40.4	59.6	24.4	8.4
		Medical & Dental	35.6	64.4	31.2	11.4
Cuba	638	Medical Only	40.3	59.7	26.3	8.8
		Medical & Dental	31.5	68.5	35.6	14.7
D. Ages 12 & Above						
Barrio	200	Medical Only	45.5	54.4	20.0	6.5
		Medical & Dental	36.5	64.6	23.0	10.0
Cuba	12	Medical Only	83.3	16.7	0.0	0.0
		Medical & Dental	41.7	58.3	8.3	0.0

[a]Age data not available for NCDCA at time of analysis, and Contra Costa problem data incomplete because of reporting procedure confusion which omitted problems referred for retest and problems referred to public health nurses for for follow-up.

TABLE 7. NUMBER SCREENED BY SCREENING STEP AND PER CENT WITH POSITIVE FINDINGS: CHILDREN OF ALL AGES BY PROJECT

Screening Step	Barrio Clinic Total Screened 2388		Contra Costa Total Screened 3280		Cuba, N.M. Total Screened 729[a]		NCDCA Total Screened 1029[b]	
	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive
Blood	2113	11.6	2864	17.1[c]	669	2.4	822	11.7
Urine	1910	11.8	2541	0.6	689	4.9	831	0.2
Tuberculosis	826	1.7	1679	0.0	618	1.9	546	0.4
Hearing	1479	11.8	1954	6.7	666	10.1	843	6.4
Vision	1392	7.9	1852	16.0	658	23.7	862	8.6
Dental	2373	17.9	2674	27.7	670	31.9	671	31.3
Physical	2374	44.6	3229	11.0	717	42.0	980	8.0

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975
c) These rates in Tables 7-10 are estimates based on April - May, 1975, screening findings. See text for explanation.

TABLE 8. NUMBER SCREENED BY SCREENING STEP AND PER CENT WITH POSITIVE FINDINGS: CHILDREN, AGES 0-4

Screening Step	Barrio Clinic Total Screened 717		Contra Costa Total Screened 1557		Cuba, N.M. Total Screened 79[a]		NCDCA Total Screened 350[b]	
	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive
Blood	551	21.8	1255	17.5	73	2.7	298	16.4
Urine	436	8.7	995	0.4	60	11.7	297	0.3
Tuberculosis	219	1.4	600	0.0	76	1.3	212	0.9
Hearing	128	16.4	341	8.1	46	17.4	308	6.5
Vision	99	14.1	268	4.5	38	39.5	290	8.3
Dental	714	5.9	1025	19.1	75	46.7	229	26.6
Physical	714	40.9	1526	10.0	79	43.0	333	9.3

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 9. NUMBER SCREENED BY SCREENING STEP AND PER CENT WITH POSITIVE FINDINGS: CHILDREN, AGES 5-11

Screening Step	Barrio Clinic Total Screened 836		Contra Costa Total Screened 994		Cuba, N.M. Total Screened 638[a]		NCDCA Total Screened 603[b]	
	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive
Blood	806	9.7	925	16.9	595	2.4	483	9.5
Urine	762	14.6	884	0.7	628	4.3	484	0.2
Tuberculosis	342	2.9	599	0.0	541	2.0	326	0.0
Hearing	761	14.4	916	5.8	619	9.5	475	5.5
Vision	729	8.0	888	19.8	617	22.7	524	7.6
Dental	828	24.6	951	36.8	583	29.7	398	32.7
Physical	829	44.5	981	12.0	637	40.8	577	7.6

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 10. NUMBER SCREENED BY SCREENING STEP AND PER CENT WITH POSITIVE FINDINGS: CHILDREN, AGES 12+ AND ABOVE

Screening Step	Barrio Clinic Total Screened 200		Contra Costa Total Screened 729		Cuba, N.M. Total Screened 12[a]		NCDCA Total Screened 62[b]	
	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive	Number Screened	Per Cent Positive
Blood	186	2.7	684	17.1	1	0.0	37	0.0
Urine	186	18.8	701	0.7	1	0.0	46	0.0
Tuberculosis	66	1.5	480	0.0	1	0.0	26	0.0
Hearing	186	5.4	697	6.9	1	0.0	49	12.2
Vision	184	5.4	695	19.7	3	33.3	42	21.4
Dental	196	24.5	698	27.8	12	50.0	39	46.2
Physical	196	44.9	720	12.0	1	100.0	57	5.3

a) Medical Screening began September 1974
b) Number Screened January 1974 through March 1975

TABLE 11. TEN MOST FREQUENT CONDITIONS DETECTED BY SCREENING IN RANK ORDER BY PROJECT

Conditions	Barrio		Contra Costa		NCDCA	
	Rank	No.	Rank	No.	Rank	No.
Dental	1	425	1	740	1	210
Anemia	2	257	2	361	2	108
Genitourinary	3	231	10	11	10.5	3
Pinworms	4	200				
Hearing Loss	5	176	4	99		
Vision	6	116	3	223	3	65
Otitis Media	7	115	6	29	4	31
Dermatological	8	114	7.5	24	6	12
Upper Respiratory	9	89	9	22	7.5	6
Infection & Parasites	10	88				
Orthopedic			5	30	10.5	3
Heart & Circulatory			7.5	24	7.5	6
Injuries					5	22
Speech					9	4

TABLE 12. HISTORY AND TREATMENT STATUS OF PROBLEMS DETECTED BY EPSDT SCREEN BY PROJECT

	Number of Problems	Number with Reported History	Previously Unknown and Untreated	Previously Known	
				Treated	Untreated
All Ages			%	%	%
Barrio[a]	1,966	1,856	65.3	3.4	31.3
Contra Costa	702	694	62.4	4.7	32.9
Cuba, N.M.[b]	88	51	78.5	7.8	13.7
NCDCA	396	373	76.9	6.2	16.9

a. Excludes false positives for the Barrio.
b. Represents only those problems referred to the Checkerboard Area Clinic.

TABLE 13. PERCENTAGE OF SCREENING PROBLEMS DECLARED CHRONIC AND ACUTE, BY PROJECT[a] AND AGE

	Number	Per Cent Chronic	Per Cent Acute
A. All Ages			
Barrio	1,639	80.0	20.0
Contra Costa	110	68.2	31.8
Cuba, N.M.	52	86.5	13.5
B. Ages 0-4			
Barrio	516	70.0	30.0
Contra Costa	33	45.4	54.6
Cuba, N.M.	1	100.0	0.0
C. Ages 5-11			
Barrio	735	85.2	14.8
Contra Costa	53	73.6	26.4
Cuba, N.M.	50	88.0	12.0
D. Ages 12+ and Above			
Barrio	147	85.0	15.0
Contra Costa	24	87.5	12.5
Cuba, N.M.	1	0.0	100.0

a) NCDCA data not available at time of analysis.

TABLE 14. CHILDREN WITH CURRENT (UP TO DATE) IMMUNIZATION STATUS, BY PROJECT AND AGE

	Number	Per Cent Current				
		DPT	Polio	Mumps	Measles	Rubella
A. All Ages						
Barrio	1,421[a]	61.4	56.5	1.8	56.9	56.9
Contra Costa	3,280	76.4	76.9	79.4	85.2	82.8
Cuba, N.M.	729	38.5	28.8	b	69.8	66.4
NCDCA	1,029	37.8	36.8	32.3	44.1	37.5
B. Ages 0-4						
Barrio	557[a]	58.0	54.6	1.4	47.2	46.1
Contra Costa	1,557	75.0	74.1	80.5	85.8	85.0
Cuba, N.M.	79	30.4	27.8	b	65.8	58.2
NCDCA	350	54.0	56.3	49.7	63.4	54.9
C. Ages 5-11						
Barrio	469[a]	70.8	64.8	2.8	74.4	76.5
Contra Costa	994	75.7	77.8	78.7	86.4	83.0
Cuba, N.M.	638	40.3	29.5	b	71.6	68.7
NCDCA	603	31.7	29.0	24.9	36.7	31.2
D. Ages 12+						
Barrio	55[a]	81.8	72.7	7.3	78.1	72.7
Contra Costa	729	80.4	81.6	78.1	82.3	77.8
Cuba, N.M.	12	0.0	0.0	b	0.0	0.0
NCDCA	62	12.9	9.7	9.7	16.1	8.0

a. Barrio reports immunization status only for those children with immunization records.
b. Cuba does not check on immunization status for mumps.

FIGURE 1 - AGE DISTRIBUTION OF CHILDREN SCREENED BY PROJECT

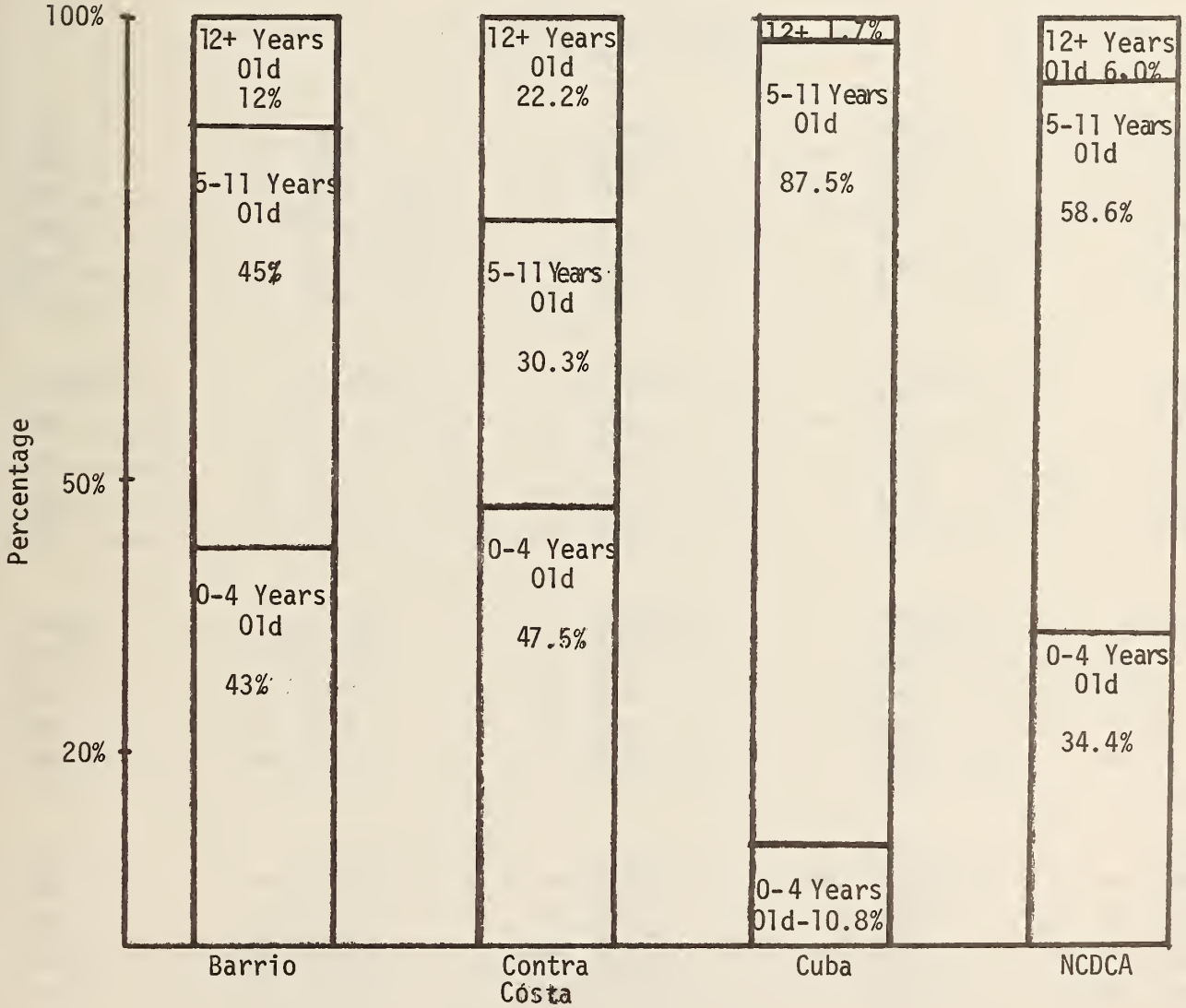
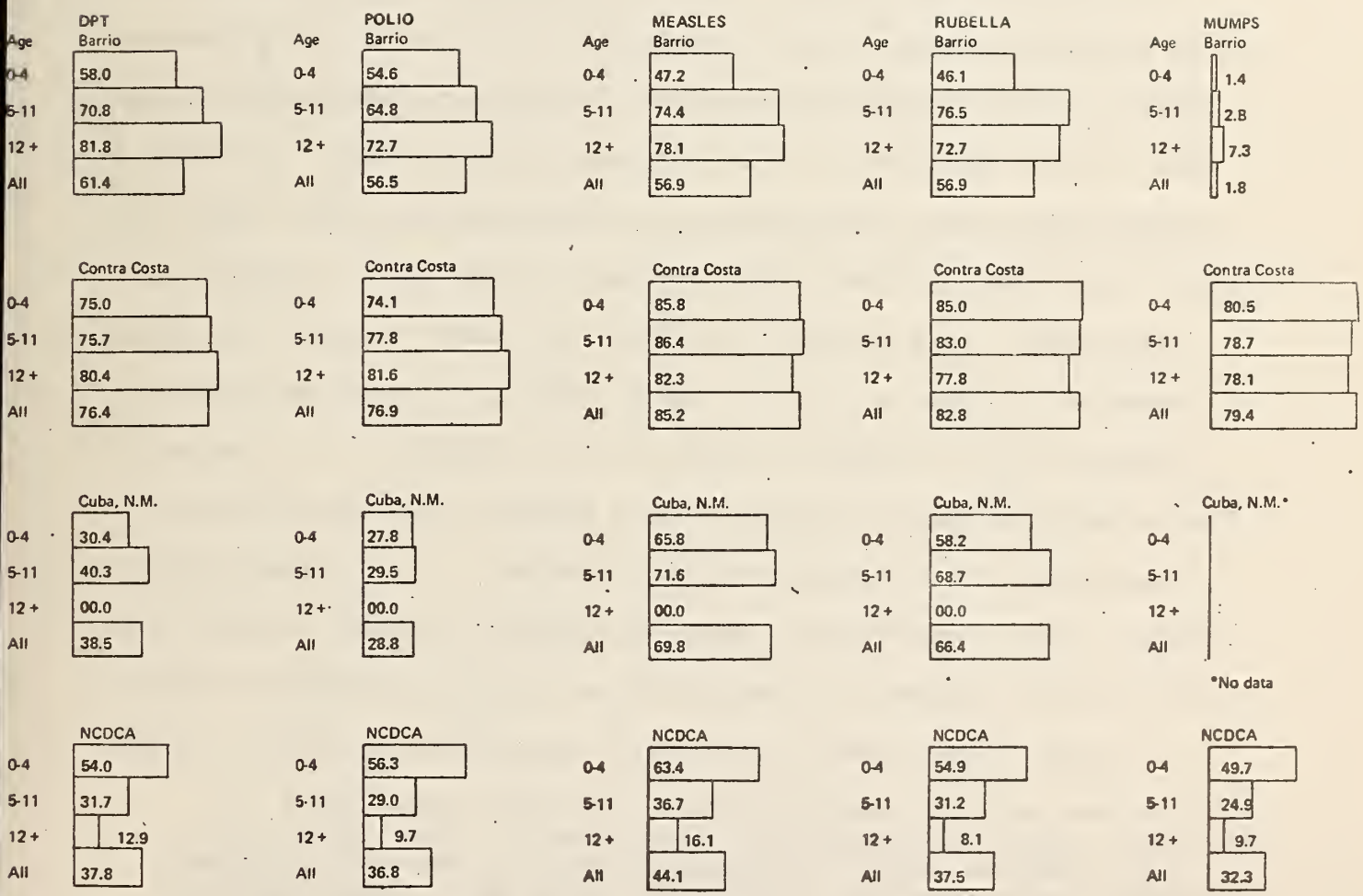


FIGURE 2. IMMUNIZATION STATUS
BY AGE AND PROJECT, IN PER CENTS



CHAPTER 6

SCREENING EQUIVALENTS: THE PROBLEM OF DUPLICATION OF EFFORT

An important issue which arose early in the first year of the national EPSDT implementation was the problem of duplicate screening that might result from screening all EPSDT eligible children. That is, how many children screened by Head Start, Crippled Children, or other federally supported child health programs would receive two or more screens within a 12 month period? A second and similar issue followed close on to the first was the view that many EPSDT eligible children regularly receive medical care through Medicaid and, therefore, do not require screening. The assumption here is that children seeing physicians for "sick care" receive (or should receive) examinations essentially equivalent to an EPSDT screen. Thus, the notion of "screening equivalents". In its early effort to assess the impact of EPSDT screening in several States, HSRI undertook a small exploratory study addressed to both of these questions, i.e., how much duplicate screening takes place between EPSDT and other federally supported programs, and how many children screened by EPSDT programs are receiving medical attention essentially equivalent to a screen? The results of these two efforts may be summarized as follows:

1. There appears to be very little duplication and even when it occurs, it is probably good. In the Phase I EPSDT Evaluation (October, 1972) with respect to duplication, it was documented that three per cent of 824 children sampled in New Jersey, Mississippi, and Iowa had been screened by different federally funded programs within the same year. However, those that received two screens were found to have completely different findings reported.

2. A low per cent of children had received EPSDT equivalent screening services. In the Phase II EPSDT Evaluation (September, 1973) with respect to screening equivalents, it was found that the percentage of children with a physical examination received and documented within 12 months prior to

the date of EPSDT screening varied from State to State, with a high in Iowa of 62 per cent to a low in Mississippi of 24 per cent having had a previous physical examination. In 432 cases of children screened in eight States, only 12 per cent received what was relatively comparable to an EPSDT screen, that is, some laboratory testing (e.g., blood, urine, etc.) and hearing and vision testing.

3. The previous history of physical exams was not different when comparing normal children with those of positive findings. The Phase II study contained 236 cases from six States for which no problems were detected by screening. Only 15 per cent of these children had received during the past 12 months what might be called a relatively complete medical examination; and of this proportion, only 11 per cent could be described as having what could be identified as fully equivalent to a complete EPSDT screen. In another series of 150 cases referred to medical providers in the same six States, only 25 (17%) had relatively complete examinations in the 12 months prior to their EPSDT screen; and of this number, only 20 per cent had what could be defined as equivalent to an EPSDT screen.

4. In Phase II a comparison of the Medicaid payment records of children found positive on EPSDT screens with those found negative showed that they averaged the same number of visits to health providers in the year preceding their EPSDT screen.

For purposes here, a complete EPSDT screen is defined as including a physical examination, a dental examination, and testing for vision and hearing problems. This is obviously a minimal definition in that tests employing blood and urine are excluded. In three of the projects, Barrio, Contra Costa and NCDCA, only 17 children above four years of age were identified as having had all four of these screening elements in the 12 months prior to their EPSDT screen. That number is far less than one per cent of the total.

Table 15 sheds additional light on the matter. Part A of the table gives the percentage of the children of all ages who were reported by the parents as having had an examination for each of the four elements in a minimal screen. Care must be taken in using the data because the child may have received the test without the mother's awareness of the test being given; however, self reporting is the best evidence we currently have available. Sharp differences

appear among the children for each of the projects. For example, far fewer than ten per cent of the Barrio children could be described as having had a screening equivalent under each of the steps. The percentage of Contra Costa children who had received a screening equivalent was two to five times greater than that of those from the Barrio. And, except for dental care, the percentage of NCDCA children examined under these four elements was roughly three times greater than that of the Contra Costa children. NCDCA had the smallest percentage who had had a dental screen equivalent, and, it might be noted, 40 per cent of those in Contra Costa had had such a screen. Finally, as an examination of the table indicates, there was a strong tendency for the percentage of children with screening equivalents to increase with age. The most likely explanation of this increase with age is that it reflects some compliance with school, sports, and organizational requirements. But the proportions are quite small. Moreover, it is in the 0-4 age group where screening, diagnosis and treatment may have the highest pay-off as a result of early detection of vision, hearing, dental, heart, and nutritional problems.

The Phase I and II findings and those from three of the demonstration projects support several conclusions: (1) disregarding age, the proportion of children likely to receive multiple screening is far less than ten per cent; (2) the proportion of children who have a screening equivalent on one of the four elements increases with age; (3) the proportion of children with a screening equivalent on the four elements varies from place to place, a fact no doubt reflective of the services available in different communities; (4) it does not appear that visits to physicians and outpatient clinics as often or more often than once per year gives satisfactory assurance that a child receives what amounts to an EPSDT screen; and, finally, (5) given the absence of care

equivalent to EPSDT screening among children who appear at screening clinics, it is possible that the lack of such care is even lower among those who fail to show.

A recent study of EPSDT by the General Accounting Office recommended that "HEW should develop criteria for determining which children do not need EPSDT because they are receiving regular, adequate medical care equivalent to screening and disseminate the criteria to all States so that screening efforts are directed toward children who need it."* One might agree that such criteria are needed, but on the basis of HSRI findings thus far there are extremely few children toward whom EPSDT is directed who regularly receive medical care equivalent to an EPSDT screen. Effort required to identify the children not in need of a screen might prove more costly than screening.

Some findings and a conclusion of a study by the Institute of Medicine of the National Academy of Sciences on health care of children in Washington, D.C. are clearly in line with this conclusion. The Institute's report says:

> Less than one-fourth of the solo practitioners said they routinely screened for anemia in young children, compared with 70 to 100 per cent of the physicians associated with all other care organizations.
>
> Analysis of the charts of three provider organizations--hospital clinics, prepaid group practice, and the neighborhood health center--showed a wide variation in the percentage of children who actually had a recorded screening test (hemoglobin or hematocrit) for anemia. Less than one-fourth of the sample of children attending hospital out-patient departments were indeed screened for anemia, while between 80 and 90 per cent of those children attending the prepaid group and neighborhood health center had at least one screening test for anemia.
>
> Overall, a simple screening examination such as a hematocrit

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* Report to the Congress: Improvements Needed to Speed Implementation of Medicaid's Early and Periodic Screening, Diagnosis, and Treatment Program, January 9, 1975, p. iv.

test was recorded in the medical charts of almost three-fourths of the younger children whose charts we reviewed. However, of those children with abnormal blood tests, almost two-thirds were not diagnosed by their physician as having anemia and, consequently, were not treated for the condition. For vision disorders and hearing loss initial screening examinations were recorded on a very small percentage of the charts that were reviewed--18 and 3 per cent, respectively. Thus, one can assume that for vision disorders and hearing loss the overwhelming majority of the children were not even tested by their usual source of medical care for the presence of these conditions. If the initial screening tests were not done, it is clear the children with the conditions could not have been identified and could not have been treated.*

The conclusion reached on the basis of these findings was: "Medical care processes, such as screening, diagnosis, and follow-up management, in general, were poorly performed by the various provider organizations."

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* Assessment of Medical Care for Children, Volume 3 of the Contrasts in Health Status series, (Washington, D.C.: Institute of Medicine, National Academy of Sciences; 1974), pp. 3-4.

TABLE 15. CHILDREN WITH REPORTED SCREENING EQUIVALENTS (HEARING, VISION, PHYSICAL, DENTAL) IN THE 12-MONTHS PRECEEDING ORIGINAL EPSDT SCREEN BY PROJECT AND AGE[a]

	Number Screened	Hearing	Vision	Physical[c]	Dental[d]
A. All Ages[b]		%	%	%	%
Barrio	1,753	3.4	3.7	8.4	7.4
Contra Costa	3,280	7.0	9.6	14.2	39.9
NCDCA[e]	518	25.5	26.3	36.3	5.8
B. Ages 0-4					
Barrio	717	0.6	0.3	2.9	1.1
Contra Costá	1,557	1.5	2.4	15.2	15.1
NCDCA	352	30.1	4.0	45.5	7.4
C. Ages 5-11					
Barrio	836	4.4	4.9	11.5	11.4
Contra Costa	994	11.6	15.4	12.4	59.1
NCDCA	150	14.7	16.0	16.7	0.7
D. Ages 12+					
Barrio	200	9.0	10.0	14.5	12.0
Contra Costa	729	12.5	16.7	14.3	66.8
NCDCA	7	42.9	28.6	28.6	0.0

a. Cuba, New Mexico does not obtain this information.
b. Figures for the age categories do not add to that for all ages because of missing age data.
c. Defined as having received an unclothed examination and/or a school physical.
d. Defined as having seen a dentist for an examination and/or clinical care.
e. Information obtained only on 518 children of 1,029 screened.

CHAPTER 7

DEVELOPMENTAL SCREENING

One of the important and perplexing EPSDT tasks is the matter of screening for developmental as well as emotional problems. The need for such screening is relatively obvious if one only accepts the commonly cited view that the prevalence of such problems is on the order of one in ten among children.* Children with a moderate to severe developmental or emotional disability, particularly among low-income children, have a high probability of educational failure. This, in turn, increases the probability of continued social and economic dependency. High EPSDT pay-off should be possible in this area of screening, diagnosis, and treatment. But there are difficulties.

A chief problem is technological, particularly for screening for emotional problems. There are currently no standardized methods of screening which allow rapid and economic administration, have a relatively high degree of validity

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* How many children have developmental and learning problems is not subject to precise answers. The Joint Commission on Mental Health of Children estimates that less than one per cent of the nation's children are psychotic; however, some 2 to 3 per cent were estimated as severely disturbed, and an additional 8 to 10 per cent afflicted with other emotional problems. Only 5 to 7 per cent of those in need of professional help were estimated as receiving it. See pp. 255-256, Crisis In Child Mental Health: Challenge for the 1970's (New York: Harper & Row, 1960). Zax and Cowen in reviewing the "supply and demand" equation refer to the estimates of the Joint Commission, but go on to cite other studies which suggest that 10 per cent of all elementary school children need professional help. In all, some 30 per cent are said to have identifiable difficulty in adjustment to school. On the basis of other research, the 30 per cent figure is estimated to rise to 70 per cent in metropolitan ghettos. See M. Zax and E. L. Cowen, Abnormal Psychology (New York: Holt, Rinehart, and Winston, Inc. 1972), pp. 384-385.

and reliability, and are cross-culturally (cross-ethnically) applicable. Once a child is identified as having a problem, diagnosis is less problematic in some respects, but can be costly. A high order of knowledge and skill are required for diagnosis and treatment of some conditions. Although there is yet much to be learned about treatment of developmental and emotional conditions, our capability in this respect exceeds our effort at application.* There are at a minimum three basic factors behind this low level of effort. First is the potential magnitude of the task and cost of doing something about it. For example, if one in ten children among the eligible could indeed benefit from remedial or therapeutic intervention, the number under care at any time would be on the order of 800 thousand to a million or more depending upon age cut-offs. A second factor is the absence of adequately trained personnel for carrying out required programs. A third is inadequate utilization of existing resources. The latter problem stems in great part from a fundamental divorcement between our health, educational, and welfare institutions.

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* One has only to note the names of Nicholas Hobbs, Emory Cowen, Margaret Gilder and John Glidewell, to mention only a few, as a reminder of how much work has been done. A good review of some of their work and that of others is found in Zax and Cowen (cited in the preceding footnote). Chapters 15 and 16 on developmental screening, which also provides practical suggestions, references to instruments, etc. is found in W. K. Frankenburg and A. F. North, Jr., A Guide to Screening for the Early and Periodic Screening, Diagnosis, and Treatment Under Medicaid. (Washington, D.C. Social Rehabilitation Service, DHEW, June, 1974). For the newcomer to EPSDT interested in the issues and problems of screening and treating emotional and developmental problems, the last six chapters of Zax and Cowen will be of value. A recent volume issued by the National Institute of Mental Health in connection with the celebration of the 25th anniversary of the National Mental Health act reviews the Institute's current and past efforts in the field of child mental health. See J. Segal, (ed.) The Mental Health of the Child: Program Reports of the National Institute of Mental Health (Washington, D.C., U.S. Goverment Printing Office, 1971).

We have not yet found a fully productive way of coordinating the efforts and vast resources of these institutions for effective preparation of the low income children and youth of the nation for life. Indeed, some might argue not for any. As will be seen from an altogether too brief description of the efforts of the three projects working in this area, that each has, independently of the other, faced the above problems in one way or another.

What follows in this chapter is a short description of what each project is doing, a preliminary report on some findings, a review of certain problems and issues, and a tentative conclusion. At the outset it should be noted that HSRI has provided data reporting forms and some computer processing of findings and data analysis related to the projects research (test development) needs. The latter applies specifically to the Cuba and NCDCA projects which devote over 50% of their effort to revision and/or development of screening instruments and the development of norms for their populations.

The Barrio:

The Barrio employs the Denver Developmental test for children under six years of age, which is usually administered by outreach aides in the home. Children failing the first screen are scheduled for rescreen at the Clinic. If the second screen is failed, the child is either referred to other community agencies or to the Barrio Special School (BSS) operated by the Clinic. The more severe cases are referred to professionals or specialized community agencies dealing with the particular problems. During the period covered by this report, the Denver was given to 1,305 children who were, for the most part, under six years of age. Reports on 1,295 of these show that 67 (5.2%) failed (principally because of language problems). These children are referred

to BSS where they are tested by the teacher with help of a consultant or by a consultant. Those children for whom the testing indicates a need are placed in a morning program, which provides language training and remedial experiences. A total of 50 children have been enrolled in the school which has an average attendance of 20.

The Barrio Special School was started by the Clinic early in 1974 in an effort to provide help for those children failing the Denver. The Clinic was able to obtain the services of a young Mexican American with a master's degree in psychology to conduct the program. His work with the children was done in small groups of four to six, but each child was given special attention with the help of graduate students in special education. During the course of this work, the Denver scores of children screened prior to January, 1974 were reviewed. Some 220 were identified as in need of attention. A number of these children were tested with an instrument, the Developmental Assessment Form* (DAF), developed by the Early Childhood Education Center of local school districts for Mexican American children. The exact number tested is unclear; however, some 68 had developmental deficits of three months or more in one or more of the following: motor skills, intellectual functioning, language, self-help, and social development. Pre and post-test results for 23 of the 25 children attending remedial classes for an average of just over four months showed that 70 to about 90 per cent of those with lags of six months or more had made gains in all areas. Except for language and social skills about half made post-test developmental scores expected for their age.

Such results are both encouraging and uncertain. The uncertainty arises

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*So far as is known, this test has not been standardized.

from the fact that they are more or less "clinical", i.e., not obtained under controlled conditions and by use of known instruments. The results are encouraging in that they do suggest, as has been demonstrated many times, that children with such deficits can make rapid advances. The aim here is not to examine what has been done or to speculate about the permanency of such gains and their fate as children progress from preschool to school programs. Rather the aim is to show what happened to the 68 children identified as in need of help in the months immediately following their identification as in need of help. What happened according to project records may be enumerated as follows:

15 (22%) moved out of the service area of the Barrio Clinic and were no longer available for whatever services might have been mobilized for them. No further effort at follow-up was done.

13 (19%) were identified as having "mild" emotional difficulties which could be dealt with through parent training and consultation. Some help in this regard was provided, but no follow-up or retesting of the children was done.

12 (17%) had problems which could best be dealt with by mental health or other programs for children and were referred to them.

3 (4%) were enrolled in public schools and were not put into the remedial program of the Clinic. Their teachers may have been informed, but there is no record of such follow-up.

25 (38%) of the 68, all preschoolers, were scheduled for the program described above, now called the Barrio Special School. Some learning consequences for them were given above.

These sorts of outcomes do not suggest as much about the prevalence of such problems and the magnitude of the need as they do about the complexities of doing something about the problems identified by screening.

Before leaving this program, it should be noted that children over age six have not been systematically screened by the Barrio Clinic. However, in late Spring of 1975, a procedure was established for administering the Wide

Range Achievement Test (WRAT) to those over six years of age whose history suggests inadequate functioning. Those scoring poorly on the WRAT are admitted to an educo-therapy program of the Barrio Special School, an after-school activity providing tutoring and related assistance for the children. Currently, the attendance averages about 25 per afternoon. According to project staff, mothers in the community are requesting an expansion of the after-school program, saying that the schools are unable to help their children.

In addition to its role of identifying children with problems, the Barrio is serving as an expeditor and facilitator by assisting families in the enrollment of their children in other community programs and by providing interim treatment while attempting this. Currently, because of transportation and financial barriers, which prevent the admission of such children to other programs, the Barrio Clinic is giving serious consideration to expanding its own treatment efforts. Its principal handicap, as is the case of most other such undertakings is a lack of stable funds which permits stable staffing of properly trained personnel.

Cuba:

Cuba, as indicated earlier, screens children enrolled in 17 mission schools, public schools, and Bureau of Indian Affairs Schools. Developmental screening is done by screening aides trained and supervised by the two part-time staff psychologists. The aides are bilingual, i.e., speak English, in addition to Navajo or Spanish. The total screen requires about 20 minutes per child and tests for problems in four functional areas: intellectual, visual motor, English language facility, and emotional adjustment via use of Human Figure Drawing, parts of the Wechsler Intelligence Scale for Children, and the Bender Gestalt. Screening results on each child are analyzed and

interpreted for teachers and available parents within a few days after screening. Consultation on ways to work more effectively with children with problems is provided treachers. Any child performing poorly in three of the areas tested is given an extensive diagnostic evaluation by the psychologists. The program operates a "therapeutic classroom" at its headquarters in Cuba to provide individualized instruction and other help in the four functional areas (intellectual, visual-motor, language, emotional). Children with more severe problems are referred to agencies in Albuquerque or Santa Fe. Finally, summer "enrichment" programs for children failing one or two areas of the screening test are operated in Cuba and at the Bureau of Indian Affairs schools in Torreon, some 30 miles away. About 30 children were enrolled in each of these programs during the Summer of 1975.

Cuba screened 648 children in the reporting period March, 1974 through April, 1975; and 1,237 children, including 187 rescreens, for the period September, 1973 when it first began screening until the end of April, 1975. The screening results given below are based on findings from 806 of the original screens, which include only children in kindergarten through grade two. Data on children in all other grades were not complete at the time of this analysis. In what follows, only preliminary results are given. Technical details on the screening and diagnostic findings will be reported by the project staff from time to time.

Upon completion of the screening battery, each child is rated on a nine-point scale for intellectual, visual-motor, and English language facility, and on a seven-point scale for emotional adjustment. The lower end of the scales indicate poor functioning, with ratings of three or under taken as indicative of poor performance. As the following distribution shows, only one-sixth (16.5%) of the 806 children gave no evidence at the time of testing

of problems in any of the four areas.

Number of Problems	Number of Cases	Per Cent of Total
None	133	16.5
One	328	40.7
Two	228	28.3
Three	99	12.3
Four	18	2.2
	806	

An almost identical proportion (14.5%) were rated three or poorer in all four areas. Put differently, almost 85 per cent of the children were judged to have problems in one or more of the four areas. The distribution of problems by area of functioning tested was:

Intellectual	9.2%
Visual-Motor	20.6
Emotional	45.0
Language	68.2

The diagnostic work-up provided by the project requires, including time for feedback to teacher and parents, some 14 to 15 hours. For this and other reasons, a child must be rated poor (three or lower) in at least three of the four areas in order to qualify for a diagnostic battery of tests.

On this basis, 117 (14.5%) of the 806 children were accepted for diagnostic study. An additional 149 children were referred by teachers, parents, and from other sources for diagnostic study. At the time of this report, these 149 children plus 18 more had been examined diagnostically. Results of the diagnostic study will be reported later. It may be noted here, however, that 73 per cent of these were five to eleven years of age and 25 per cent were 12 years of age and over. Ethnically, 70 per cent had Spanish surnames, and 24 per cent were Navajo.

A note is in order regarding one consequence of employing a criterion of

poor performance in three or more areas for deciding what children will receive diagnostic treatment. The distribution below gives the number of children showing a problem in each of the four areas and the percentage of that number performing poorly in three or more areas.

Areas	Number	Per Cent Deficient in 3+ Areas
Intellectual	74	85.1
Visual-Motor	166	49.4
Emotional	363	30.3
Language	550	20.7

This distribution indicates that children identified as having an intellectual deficit are more likely, 85 of 100, to have three or more problems while only 20 of 100 of those with language difficulties are likely to have as many problems. All told, the decision to use three or more problems as the standard for selecting children for diagnosis appears to have merit, particularly for those with intellectual deficits; although some might be concerned about the fact that half of those with visual-motor and about two-thirds of those with emotional problems will not get diagnostic attention. Since difficulty with language was the most frequent problem, it is encouraging that 58 per cent of those with this problem had no other problem.

However, such findings are, to use affective language, distressing, particularly in view of the fact that over two-thirds of the children were shown to have problems in the use of English--the language of most of their teachers and that in which they must attain considerable facility if their performance is to exceed a level beyond marginal survival. Equally serious is the fact that well over two-fifths (45%) were judged as having problems of emotional adjustment. Given the resources of the area and current efforts to deal with such problems, the future of these children does not appear encouraging.

NCDCA:

This program aims to give a developmental screen to all children enrolled in its eight preschool and six after-school centers located in the Model Cities Area of Washington, D.C. Preliminary to a full screening effort has been the development of a screening instrument that is fair for the population with which it is used. Work on this instrument, the Developmental Systems Analysis (DSA), as it is currently called, continues. The test consists of 72 items (reduced from 129) distributed over four areas: language, 20; cognition, 20; visual-motor, 20; and memory, 12. A total of 446 children have been screened with this test and 294 of these have been retested with the instrument to determine program effect on performance. Norms for determining developmental ages have been established by the project. It is anticipated that technical details of the development of the instrument will be reported in professional journals by the project staff.

The DSA is used to determine a child's developmental level. This is done by subtracting the chronological age (CA) from the developmental age (DA), as measured in months by the DSA. These measures are made for each of the four areas covered by the test as noted above. A child whose DA is six months or more below its CA is said to "lag" in the given area. Children having a lag of six months or more in any two of the areas are recommended for a remedial experience offered by the program. Among 208 children completing all four parts of the test in 1974, 40 per cent had a lag in one or more areas, and 14 per cent had a deficit of 12 months or more in at least one area. On the basis of the project's treatment criterion, 22.6 per cent of the children were in need of remedial treatment. If the cut-off for treatment is set at a 12 month lag in two or more areas, the percentage in need of remedial attention drops

to 4.8 per cent. This is a clear reminder of the critical impact of criteria of need and setting cut-off points.

NCDCA conducts two programs of treatment: one for developmental problems and one for children with emotional and behavioral problems. The developmental remedial program is conducted under experimental conditions as follows: children are divided into two groups. One set receives one-to-one treatemnt by a "developmental" team of special education teachers. The second group is under the NCDCA regular day-care program with other children, but their teachers work with them in terms of special plans and recommendations, prescribing what experiences these children should have. Pre- and post-test results by the staff show that the one-to-one treatment produces measurable improvement after three months. However, larger samples are still needed before completing the analysis.

Treatment for children with emotional problems is provided in a therapeutic nursery school (TNS) in which the child spends one-half day with two teachers and six other children. Children are referred to this part of the program by teachers in the day care centers and by the developmental assessment team. Final diagnosis is made by a child psychiatrist. Most of the children referred are diagnosed as either hyperactive or withdrawn. The therapeutic effort of the teacher is under the general supervision of a psychiatrist. A social worker serves the programs and holds weekly conferences with the parent(s) of each child. This is considered an important feature of the program, and the attendance of the parents at these individual conferences is on the order of 70 to 80 per cent.

The TNS model was first introduced by Anna Freud and has been used in the United States for the past twenty years. The key to the model is a staff-child

ratio of 1 to 5 with three hours daily therapy time in a small self-contained classroom.

This therapeutic nursery has not been a focus of research during this reporting period, but data collection is now ongoing concerning its effect upon the children. In the fiscal year 1976 other techniques will be tried including "mainstreaming" (teaching regular classroom teachers how to deal with the problem children) and a modified TNS in which the basic TNS model will be used, but the class size is increased, and the children are returned to the regular classroom for part of the day.

Conclusion:

What has been learned from these three projects with regard to screening for developmental and emotional problems? It is much too early to answer the question. All the data are not in and, given the way things work with such projects, all of it may never come in; funding will terminate, staff will move to other pursuits, the children will not be followed, and data on hand will not be fully analyzed and reported. In spite of these realities, some things have been learned thus far. Some of these will confirm what many will say, and perhaps correctly so, "We knew that all along". Nevertheless, some of the outcomes deserve enumeration:

1. There are emotional and developmental problems among the children served by these projects. Precise prevalence statements are not possible; the projects were not designed as epidemological studies. However, near to a quarter (22%) of the 208 NCDCA children completing all four tests were judged as in need of a remedial attention, and almost 85 per cent of the 806 Cuba children tested were evaluated as having one or more deficits in the four areas tested.

2. Resources available for dealing with the developmental and emotional problems identified by the projects are far from adequate. Resources of the projects are the only ones available for dealing with such problems. The Barrio and NCDCA are somewhat better off in that they are located in

large urban communities. However, current levels of resources are inadequate for dealing with the problems which screening is identifying.

3. On the basis of the Cuba experience, two facts seem to be emerging: (a) a cross-culturally applicable developmental screening instrument requiring no more than 20 minutes may be possible; and (b) this instrument can be administered by high school graduates of the same ethnic identity and primary language.

4. The NCDCA experience indicates the possible development of a similar screening instrument applicable to urban Black children. In addition, NCDCA anticipates that the instrument it has under development will also have diagnostic potential. Here, as well as for Cuba, the instruments must be validated.

5. All of the projects engaged in developmental screening are also conducting some therapeutic and remedial treatment. At this time, given the amount and pattern of funding currently anticipated, the outcomes of these efforts cannot be precisely assessed.

6. Given the magnitude of the problems, the complexities of dealing with them, the level of funding of the projects, the length of time funded, these three projects have attacked the problems rather boldly, perhaps too boldly in the mind of some. Cuba and NCDCA should be encouraged to seek from SRS, NIMH or elsewhere, additional funds to support systematic pursuit of their current efforts to link their efforts and findings more firmly with the existing body of knowledge in this area.

CHAPTER 8

MOTIVATING CLIENTS TO USE THE SCREENING SERVICES: AN EXPLORATION OF METHODS

The tasks and conditions of motivating clients to use the screening services (case finding) are in great part defined by the target populations. In the case of the four projects there are two generally different sets of conditions: The Barrio and Contra Costa Projects, on the one hand, serve families and their children residing in specified geographic areas; on the other hand, NCDCA and Cuba are targeted, respectively, on children served by a day care program and children enrolled in several schools. When compared to the conditions and terms under which most EPSDT programs are operated, three of the projects are relatively unique and useful for demonstrating differences in outreach requirements and tasks. However, the Contra Costa project, given the fact that it is operated by a local health department, is perhaps more typical of what will emerge as the most common pattern for delivery of EPSDT services. A principal difference is that this project has an outreach staff as an integral part of the program. More specifically, the Contra Costa project is responsible for its own outreach function, and is thus not dependent upon other agencies such as a welfare department to perform this task for it. Moreover, the health department had recently concluded a health care program which emphasized outreach services.

For these and other reasons the Contra Costa program undertook a two-phase pilot study to explore the effectiveness of various methods of casefinding. In the main, this chapter is principally devoted to a description of this study and its results. Prior to doing this, a brief consideration of the outreach

function is given, and some of the outreach conditions and problems in working with captive populations as experienced by the Cuba and NCDCA programs are reviewed. In describing the Contra Costa study, reference will be made to a limited exploration made by the Barrio Clinic in the use of incentives to increase outreach productivity on the part of community aides. The final section presents some guidelines for staffing case-finding programs.

The Case-finding Function

Many people are unsettled by the notion that an effort should be made, i.e., funds expended, to get families to bring their children in for medical care which is free.* This is no place to argue the pros and cons of this issue other than to suggest that the principal hope for avoiding future excessive health care cost and of assuring a healthier population is to move as directly and rapidly as possible into a preventive mode of health care rather than remain heavily invested in "after the fact", crisis oriented therapeutic medicine which is approaching the point of diminishing returns. To do this will no doubt require a marketing-like approach which will include a strong educational component.

Such considerations have to do with long-term outcomes, but so does EPSDT. In fact, it may be argued that EPSDT is the nation's first major effort at moving toward delivery of a preventive health care, and is targeted not only on a needy sector of the population but also on one where preventive

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*The notion "free" perhaps needs to be placed in quotes to raise a question as to whether it is always without monetary costs. To get one's children to and from screening sites always involve costs of some order, and under some circumstances they are dollar costs. In a study of EPSDT in rural Mississippi counties, for example, it was found that some families without transportation had paid as much as 10 per cent of their monthly welfare income for taxi services to get to EPSDT screening clinics. Such costs are sacrifices when taken from limited Welfare support funds. SEE: J. Lindsey Bradley, "A Study of Broken Appointments For Pediatric Screening Examinations", (Master's Thesis, Trinity University, 1975), p. 54.

pay-off should be high. If past experience has taught us anything, it is that most of us, even the most knowledgeable among health professionals, not just the poor, all too often lack a long-run preventive orientation. Ways need to be found to correct this. Case-finding services oriented toward prevention can perhaps be conceived and conducted in a way to facilitate preventive health behavior.

But what of the short-term? Here the cost consequences are more immediate. To maintain cost-effective screening, children in sufficient numbers must be available to keep a screening staff busy. Certain costs go on regardless of how few children are screened; the smaller the number screened in a unit of time, the higher the per capita cost per screen. For this reason, if for no other, the case-finding function is important. The critical question is: What are the most cost-effective ways of getting children to screening sites? It is issues of this sort which are approached in this chapter.

Case Finding for Captive Populations

Screening populations such as those served by Cuba and NCDCA has the obvious advantage of having children being screened in one place at one time at no effort on part of the screening program. But this convenience has its price. Children not enrolled in school or day care programs are excluded from screening. To serve these children additional effort demanding an entirely different mode of operation is required. But many more immediate operational decisions and problems arise: should the screening be conducted on-site or should the children be transported to screening sites located away from the schools: Should the screen be multiphasic or monophasic, i.e., give the entire screening battery at one time or one step at a time on different occasions? Either approach presents problems. Children absent at the time of

screening require additional time and expense. Monophasic screening and absenteeism exacerbate the problem and particularly so when absenteeism is high.

Considerably more effort than either of the two projects anticipated was necessary for coordinating screening with school and day care programs. Personnel, at all levels, have to be well-informed about the program and understand its goals to obtain adequate cooperation. Simple notification of teachers that screening will take place on a certain date and hour is not sufficient. Both projects soon found that it was not only necessary to plan and schedule in advance, but also to remind administrative people and teachers as late as the day before that screening was to take place. Otherwise screening teams would arrive and the children would be on field trips, busily engaged in other activities, or not prepared for screening. Some evidence also suggests that where there is an existing health program, EPSDT screening may be viewed as an intrusion and a threat.

Other problems arise with respect to informing parents and in obtaining signed permission for having their children screened. This requires no small effort, even in a program such as NCDCA, where there is close contact between the organization and the parents. The problem is much greater under conditions such as exist in Cuba where children are transported many miles by bus to school, where there is no telephone service, and where communication via mail between parents and school is not an easy and habitual pattern. Children can and do take permission slips home, but this requires effort and time. One useful approach is to inform parents about the program at the time of school enrollment, but not all parents show up for this occasion. For those who do, however, health histories can be obtained as well as permission for screening.

If a program is billing Medicaid for screening of eligible children, as in the case of NCDCA, Medicaid numbers can also be obtained at this time. Failure to obtain such information requires considerable later outreach effort.

The following section of this chapter is somewhat different from the style of the rest of the report because it describes an exploratory social experiment in which families were assigned to alternative case-finding techniques. The discussion was included within this document so that all the current information would be under one cover. The conclusion is that the most cost-effective technique of those attempted was the use of community aides making home visits to clients after an average of 3.2 attempts per person contacted. The aides were allowed flexibility in the timing of the contact and the methods used to convince the client of the value of screening. Readers not interested in the detail of the exploratory experiment should move to page 102 to read the discussion of the suggested staffing guide and the chapter conclusions.

The Contra Costa Case-Finding Study: Preliminary Findings

The case-finding study was undertaken to explore the differential effect of various methods of informing families about EPSDT services and to encourage them to have their children screened. The study, conducted in two phases, focused on 1,020 Medicaid families randomly selected from lists of eligibles residing in three census tracts in Richmond, California. In the first phase of the study, 600 of the families were approached in wave-like fashion successively employing five different outreach methods. In the second phase, six groups of 70 families each were approached using only one of seven different methods with each group. As will be seen, some of these were different combinations of methods used in the first phase.

In the wave study, those families which had had their children screened or otherwise ruled out of the study because of various contingent factors, including those which requested not to be contacted again, were not contacted in subsequent waves. The outreach methods employed were:

1. Letters were sent to all families informing them of EPSDT and suggesting that they have their children screened. Instructions were given on how to do this. Half of the families received letters on the stationery of the Health Department of Contra Costa County and half received the same letter from the County Social Services Department. The aim here was twofold: (a) to see how much response would come from letters, and (b) to see if there would be a difference in response according to the source of the letters.

2. The second wave was a brief telephone conversation by community aides bearing essentially the same message as the letter.

3. The third wave was a brief (about five minutes) home visit by the Community Health Workers (CHWs) who explained the program and invited participation.

4. The fourth contact was a second, more extended visit, in which the CHWs provided health education information and took a child health history.

5. The final wave suggested and named by the CHWs as the "anything goes" method called for greater freedom and flexibility in working with the families, i.e., the workers were free to evaluate each situation, and make home visits and telephone calls at times other than regular working hours.

The second phase of the study was planned and initiated between the third and fourth waves of the first phase. It was in the planning for the second phase when the "anything goes" method emerged. Thus, it was not part of the original design of the study. Moreover, it was used in phase two before it was applied as the final wave of the first phase.

Six weeks before the first phase got underway, a newspaper article announced the availability of EPSDT services and suggested that parents call for appointments to obtain these services. This announcement, not an integral part of the study, generated no noticeable response. Use of the mass media,

it may be noted, requires the least amount of effort on the part of a program and, conversely, requires greater motivation and effort on the part of the target population. One is never fully assured, however, as to what extent one's message is received by the target audience or how well the message is understood. The smaller and more unique the target group, the less certain one can be about these matters.

The study was initiated in the first week of June, 1974 by mailing of the 600 letters, and extended over a period of approximately 12 months. Approximately one month separated the letter and the telephone waves, and between the telephone wave and the first home visit. Four months separated these visits from the initiation of the more extended home visits in which health histories were taken, and the final wave got under way some five months later. All these contacts were made by the CHWs during the course of other duties. This explains, in part, the extension of the project over time but there was also the fact that visits, even though brief, required greater time.

Before giving the results obtained after each successive wave, it is instructive to examine what was learned about these families during the course of this effort.

Telephones: The records of these families had shown that some 255, over 40 per cent, had telephones, but 18 per cent (46) of these had been disconnected or numbers were in error. At the outset of the study then, only one-third of the families were capable of being reached by telephone.

Addresses: By the end of the study, 127 (21%) of the families were not locatable by home visits because of residential moves or unlocatable address. About one-third of these occurred in each of the three home visit waves.

No children: Twenty-five of the families (4%) reported that they had no children at the time of contact. This resulted from change in eligibility

status, or situations in which relatives had been in custody of children because of absent parents. About half of these cases appeared in the final or third wave of home visits and about one-quarter in the first and second home visits.

Phase One Results: The results obtained by each of the several waves are summarized below:

1. Letters: Eleven families (1.8%) responded to the letters and scheduled appointments, but only six (55%) were kept. Of the 11 families, seven (63%) were in response to the letter from the Social Service Department, and the remainder from the Health Department letter. Appointment keeping was reversed: only three of the seven (43%) making appointments in response to the Social Service letter kept them while three of the four (75%) responding to the Health Department letter kept their appointments. These differences are interesting, but the numbers are far too small to warrant speculation. In spite of the problems of incorrect and changed addresses, only one of the letters were known to have been returned as undeliverable.

2. Telephone contacts: The effort to reach the 255 families who had indicated possession of a telephone may be summarized as follows:

a. There were 436 attempted calls for an average of 1.7 calls over the 255 families listed as having telephones, but 46 (18%) of these were disconnected or wrong numbers.

b. The calls averaged eight minutes in length.

c. There were 141 (67.5% of 209) completed telephone calls which produced the following results:

1) Twenty-eight families (20%) scheduled appointments of which 17 (61%) were kept.

2) Thirty-six families (26%) refused services.

3) Four families (3%) had had their children screened.

4) Seventy (50%) neither refused services nor scheduled appointment.

3. Home visits: Results from the three final waves of the study are summarized in the following tabulation:

		Information Visit	History & Education Visit	Anything Goes Approach
(1)	Number of Families	536	427	229
(2)	Attempted Contacts	1,134	1,012	721
(3)	Actual Number Contacted	348	182	150
(4)	Average Number of Attempts Per Family Contacted	2.1	2.4	3.2
(5)	Appointments Scheduled	15 (2.8)*	56 (13.1)*	62 (27.1)*
(6)	Appointments Kept (% of those scheduled)	40.0***	44.6	54.8
(7)	Moved (%)	6.2	10.1	18.3
(8)	Not at home (%)	28.5	45.0	16.2
(9)	Not Interested (%)	3.0	0.7	2.2
(10)	Non-Committal Interest (%)	47.0	1.6	0.0
(11)	Children Already Screened (%)	7.8	10.5	9.2
(12)	Have Own Physician** (%)	1.9	5.2	16.2
(13)	Other (%)	2.6	1.6	5.7
(14)	Refused Service (%)	0.0	10.1	2.2
(15)	Unable to Locate (%)	0.0	2.1	0.0

* This percentage and all below it are based on the total number of families for each column. This per cent is low because no attempt was made to schedule clients during the initial information visit.

** The Program does not schedule screening appointments for families which report having their own private physicians. This practice avoids implications of interference with private practice.

*** Families may have taken children to private physicians or clinics for screening and would not appear here.

Several features of this tabulation invite comment; however, only a few will be mentioned. As judged by the average number of contacts per family represented in each of the three waves, the intensity of the effort on the part of the outreach workers increased with each successive wave, i.e., from an average of 2.1 contacts to 3.2 for the last wave. Although it could be assumed that the families remaining after each successive wave are more resistant to participation in such a program, the results, as measured by appointments scheduled, increased from 2.8 per cent for the brief home visit

to 27 per cent for the last or "anything goes" wave. There was also an increase in the proportion of appointments kept which rose from 40 per cent for the brief home visit to 55 per cent for the last wave.

Earlier, it was suggested that each successive wave, beginning with the letters through the last wave require decreasing motivation and effort on the part of families and greater effort on the part of a program*. These results appear to confirm this hypothesis. Some further support is found in the response to the letters and telephone contacts. Although these methods were less productive in terms of appointments scheduled, the proportion of families keeping appointments was 55 and 71 per cent, respectively, for the letters and telephone contacts. These rates are equal to or greater than those of the last or "anything goes" wave and suggest that the more highly motivated families respond positively to minimal stimuli.

The principal difficulty with use of the telephone for outreach is that a large proportion of the families do not have phones--about two-thirds in this case. A second problem is the difficulty encountered in finding families at home during staff working hours--over one-third of the parents with telephones were not in or did not answer their phones. A third problem is the ease by which one can refuse whatever telephone callers may be purveying; over one-third of the families contacted by phone refused to consider the proferred services. Line (14) of the above table suggests that outright refusal is less likely in home visits, particularly brief visits which do not press for

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*There are numerous variables in such a study over which control is not easily exerted. In this instance, the investment of the aides in greater emphasis on their own role in terms of what they do, the time spent with clients, and the greater the self-determination in how they use their time may be mentioned as possible contributions to the increased effectiveness over the final four waves. Some further comment on this will be made later.

decisions. Finally, the central problem of the home visit is finding people at home. Although only 10 per cent of the "anything goes" contacts were made after 5 P.M., the fact that only 16 per cent of the clients, as compared to 28 and 45 per cent of the two earlier waves, were not at home during this wave speaks well for operational flexibility in use of outreach workers.

Each worker kept records of the time required for telephoning and making home visits. The average time spent in telephoning all families indicated as having telephones was eight minutes. Visits, including travel time, average 39 minutes per total number scheduled for a brief home visit; the average for visits in which child health histories were taken averaged 96 minutes or more than one and one-half hours; and the time spent on the "anything goes" wave which also required history taking during the home visit, averaged under one hour. Although the effort to contact families was intensified in the "anything goes" wave, as shown by the average of 3.1 contact attempts, the average time per family was about two-thirds less than that of the previous wave.

From one point of view, the results of the experiment are not excessively encouraging. Only 172 families (28.7%) of the 600 families scheduled screening appointments and, of this number, only 51.2 per cent kept the first appointment. As rows (4) and (5) in the preceeding table show, the percentage of families scheduling and keeping appointments increases with each successive home visit wave. Row (11) in the table also shows that 8 to 10 per cent of the families had had their children screened between each wave. All told, there were 112 such families which, if added to the 88 families keeping their first appointment, amounts to a total of 200 families, or one-third of the 600 families in the study. Since there were no other outreach activities

directed at these families during the study period, it may be concluded, with caution* that they had their children screened as a result of the outreach effort. This suggests a build-up or incremental effect of the several waves. That this happened is shown in the following tabulation.

Method	(1) Appointments Kept	(2) Screened Between Waves	(3) (1) & (2) Cumulative Frequency	(4) Per Cent Of 600	(5) Increment
Letters	6	-	6	1.0	3.5
Phone	17	4	27	4.5	8.0
Brief Visit	6	42	75	12.5	11.7
Visit & Health History	25	45	145	24.2	9.1
"Anything Goes"	34	21	200	33.3	
TOTALS	88	112			

Column (4) gives the cumulative percentage of families having their children screened at the end of each wave. The final column (5) shows the increment added by each wave. A steady increase between each successive wave appears in each instance except between the last two. The number of families having children screened between waves could well be larger than the frequencies shown in column (2). These numbers included only those families contacted. However, on the assumption that each successive wave must deal with the less motivated families, the results are all the more encouraging. However, it could be that the most resistant families exempted themselves by asking that they not be contacted again or simply by refusing the proffered service.

Phase Two Results: The results produced by the home visits, including the "anything goes" method, indicate that visits which speak directly to health

*The necessity for caution results from the fact that there is no way to assess the effect of contingent factors which might have resulted in the mothers' decision to having their children screened.

matters are more effective than letters, telephone contacts, or brief visits which simply inform and invite participation. However, the wave approach clouds the issue by the incremental effect of the preceding waves on any subsequent wave. Phase two of the study was carried out to determine the "pure" or individual effects of each outreach methods. A sample of 420 eligible families residing in a third census tract was drawn and assigned to six groups of 70 families each. Families which used the services of the County Health Department or who had had their children screened were excluded from the sample.

The outreach activity directed at each of these groups was as follows: Group 1 was sent three different letters over a six week period on health department stationery and signed by the outreach supervisor. These three different letters described the EPSDT program, encouraged participation in the program, and gave instructions as to how to go about it. In Group 2, attempts were made to inform all persons with telephones about the program and to encourage participation. Groups 3 through 6 were contacted by home visits which varied as follows: Group 3 received a brief visit during which the families were informed about the program. In Group 4, health histories were taken of all eligible children; in Group 5, health education* was provided in addition to information about the EPSDT program; Group 6 had health histories taken and were provided health education in areas where need or interest was shown. A residual group was formed of the families from Group 2, which did not have telephones with the addition of several families from the other groups which had not been contacted at the time the study ended for their group. This group for which "anything goes" procedures were used contained

*The CHWs had received health education training in such areas as nutrition, family planning, home accidents, dental hygiene, etc.

only 57 families.

The basic results from this phase of the study whown in the table below may be summarized as follows:

1. Letters: Nine letters to seven families were not delivered. Of the remainder, five families (7.9%) made appointments and four (80%) kept them.

2. Phones: Twelve of the 19 families with telephones were contacted; six (50%) made appointments, but none were kept.

3. Home visits: Attempted contacts ranged from 2.1 to 2.4 over the four home visits groups; however, half (49%) of the families were not at home when visits were made, and twelve per cent had moved. Best outreach results were obtained by the health history and education group: 48 per cent of the families contacted made appointments and 42 per cent kept them.

4. Anything Goes: Seventy-five per cent of the families were contacted and 58 and 68 per cent, respectively, made and kept screening appointments.

Method and Number of Families	Number and Per Cent Contacted		Average Contact Attempts	Number and Per Cent Contacts Appointed		Per Cent Appointments Kept
	N	%		N	%	
Letters (N=70)	63	90.0	---	5	7.9	80.0
Phone* (N=70)	12	63.2	2.1	6	50.0	0.0
Visits:						
Information (N=70)	20	28.6	2.1	3	15.0	66.7
Health Hx. (N=70)	30	42.9	2.2	3	10.0	0.0
Health Ed. (N=70)	25	34.3	2.3	5	20.8	0.0
Health Hx. & Ed. (N=70)	24	35.7	2.4	12	48.0	41.9
"Anything Goes" (N-57)	43	75.4	3.0	25	58.1	68.0

* Only 19 (27%) of the 70 families had telephones.

The following table which includes results from those case-finding methods used in both phases of the study gives the percentage of families, by method of contact, which scheduled and kept screening appointments for their children. The two omitted methods, as can be seen from the previous table, were Group 4 (health history only) and Group 5 (health education only). In these two groups, 10 and 20 per cent, respectively, scheduled appointments but none were kept.

Method	WAVE			PURE		
		Appointments			Appointments	
	Contacted	Made	Kept	Contacted	Made	Kept
Letters	90.0%*	1.8%	55.0%	90.0%	7.9%	80.0%
Phone**	67.5	20.0	61.0	63.2	50.0	0.0
Visits:						
Information	64.9	2.8	40.0	28.6	15.0	66.7
History & Education	42.6	13.1	44.6	35.7	48.0	41.7
Anything Goes	65.5	27.1	54.8	75.4	58.1	68.0

* The exact number of letters received by addressees is, of course, unknown.

** The table is to be read as follows: 67.5% of those not responding to letters in the wave approach were contacted by phone, and of those contacted, 20% made appointments. 61.0% of those making appointments kept them. In the Pure approach, 63.2% of those on the list to be phoned were contacted, 50% of those made an appointment, but none kept that first appointment.

Although the purpose of conducting the second phase of the study was to determine the effect of each individual method, a comparison with the wave results is instructive. For example, the wave approach showed no generally clear advantage over the single method approach in rate of contacts except in the case of visits providing information. The percentage of contacts made by the wave approach using this method was over twice that of the pure

approach--65 to 29 per cent. It might be assumed that the effects of the letters and telephone calls might have contributed to this; however, beyond this difference there is no concrete evidence to support the conclusion.

Each method under the pure approach was clearly more effective in the proportion of contacted families scheduling screening appointments. By method, the percentages of contacted families scheduling appointments ranged from two to five times greater than the same methods in the wave study. Except for families scheduling appointments via telephone contacts, the proportion of families keeping scheduled appointments for the pure approach equaled or exceeded those in the wave study. In both studies, the percentage of families keeping appointments scheduled in response to letters was high--55 and 80 per cent for the wave and pure approaches. Unfortunately, the response rates were very low, less than 10 per cent. Of the 28 wave families, scheduling appointments via telephone, 60 per cent kept them, but none of the six in the pure study did so. The latter result is contrary to the notion that families which respond to "least-effort" methods (letters and telephone) are more highly prevention oriented or motivated and are thus more likely to keep appointments. In the former case, it could be that letters received prior to the telephone contact served as a reenforcer to produce the high show rate, but evidence supporting such a conclusion is lacking.

From the above comparisons, it seems evident that what the Community Health Workers called the "anything goes" approach is superior to all other approaches if the intent is to increase the probability that families will schedule and keep EPSDT screening appointments. Obviously, if the goal is only to inform families about EPSDT services, letters are the method of choice, if it can be assumed that letters do indeed adequately inform and that

to inform is all that is required. It must be emphasized that there may be a bias in the results because the "anything goes" approach was the method which the CHWs preferred. They were interested in this approach and highly motivated to make it work. There is no simple way of separating such effects from those of the case-finding method itself. However, a well-trained, interested, and motivated outreach staff is no doubt a critical ingredient.

Cost-Effectiveness of Methods

The purpose of this section is to examine the relative cost-effectiveness of the intensive or "anything goes" outreach method used in the wave and pure studies. First, an explanatory note on effectiveness and cost-effectiveness. Given specified tasks or goals of the same magnitude, the effectiveness of a method is the degree to which it achieves the stated goal. For example, assume there is an application of a different outreach method to each half of a population to achieve a specified number of screened families. The method producing the larger number of shows for screening is the more effective method. Given methods of similar effectiveness, the most cost-effective method is that method having the lower cost per show. A method may be inexpensive, letters for example, but virtually ineffective for getting families in for screening.

Comparing the appointments made and kept for the "anything goes" method for the wave and pure approaches in the above table, it appears clear that the independent effort of this method is more effective than the same approach when applied to the residual group of families remaining after four waves of different methods, i.e., it is about 45 per cent (27.1/58.1) as effective in scheduling appointments when contact is made, and 80 per cent as effective (54.8/68.0) for appointments kept. But how do the two approaches compare with respect to cost effectiveness? This is made clear in the following table

which provides an index of cost-effectiveness and the dollar cost per family showing for screening.

	"Anything Goes" Method		
	(a) Pure Single Effect	(b) Wave Effect	(c) Cumulative Wave Effect
(1) Number of families	57	229	600
(2) Number keeping appointments	17	34	200
(3) Proportion of families keeping appointments	.3	.15	.33
(4) Total costs	$587.00	$1309.00	$7899.00
(5) Cost per family showing (3) ÷ (2)	34.53	38.52	39.50

The data shown above serves as a base, but is not sufficient for complete cost-effectiveness analysis.

Standardization to same size group (assuming that the same show rates would occur in the larger group for methods represented in columns (a), (b), and (c)) gives the following table:

	Pure (a)	Anything Goes Method (b)	Cumulative Wave (c)
Projected number of families	600	600	600
Sample proportion showing	.2983	.1500	.3334
Projected number showing	179	90	198
Sample cost per show	34.53	38.52	39.50
Projected cost	6180.87	3466.80	7821.00
Projected cost per cost per cent of penetration	$207.20	$231.12	$234.58

A precise answer to the most cost-effective technique is not possible because the rates of effectiveness differ. It is not known whether the incremental costs of increasing the rates for methods a and b are the same as the average cost per per cent of penetration or not. If we assume that method b is not comparable at all and will never be, and that the incremental costs for increasing rates of shows for method a would be the stated average, then method a is more cost-effective than method c.

The "anything goes home visit" method when used alone is not only more effective but also more cost-effective by about 10 per cent than when used in the wave approach. Since the families left in the final group of the wave study may be assumed as the most resistant, it is not surprising to find that the method was less effective and less cost-effective in the wave study. The last column of the above table provides cost-effective measures for the cumulative results of the wave study. Even here the individual effect of the "anything goes" method is more cost-effective by about 12 per cent. In short, there appears to be little advantage to the wave approach, that is, no appreciable positive incremental effect occurs by its use. This does not mean, however, that letters and phones are not useful. Indeed, some exploration and experimentation in their use with intensive case-finding techniques which deal directly with responsible family members about the health of the family and its children is needed. Finally, it should be noted, the data on which the cost-effectiveness was calculated for the pure effect of the "anything goes" approach did not include "lag" results which likely occurred some time after the close of the study. Such additional results would show the pure effect of the "anything goes" approach to be more effective than shown here.

Case-Finding Staffing Guidelines

The results of the Contra Costa study and the experience of the Barrio Clinic provides some basis for guidelines for case-finding staffing. How many outreach workers are required for an effective EPSDT program? The answer depends upon how many children a program aims to screen, and the amount of effort required to get that number to the screening sites. The latter, in turn, depends upon the consequences of numerous variable factors which vary with conditions of place and time.

The CHWs spent a total of 98 hours, including travel time, in working with the families in the pure "anything goes" approach. There were 172 contacts and attempted contacts which averaged 34 minutes each for an average of 1.72 hours per family for the 57 families. Time estimates of the CHWs indicate that their time is used as follows:

Administrative paperwork	35%
Case finding	31
Follow-up	12
Clinic duty	12
Meetings, etc.	10

Assuming 165 hours worked per month, then the CHWs put approximately 50 hours (.31 x 165) per month in case finding. If an average of 1.72 hours per family is required for effective outreach, then each worker spending 50 hours per month on outreach may be expected to handle a case load of approximately 30 families per month (50 ÷ 1.72). Assuming a successful show rate of 30 to 35 per cent, then each worker would produce 10 families per month for screening. If families average 2.0 to 2.5 children each, this will amount to 20 to 25 children per month for each case finder.

The Barrio Clinic, early on in its operation, established a quota of 12

children screened per week per outreach worker. This included obtaining child and family history and performing the Denver Developmental Screening Test when children were below age six. It was soon apparent that some workers achieved the quota with relative ease while others found it more difficult. An incentive payment of three dollars per child over the quota was initiated. Some of the workers, personable and pleasantly aggressive, exceeded the quota by 18 to 20 children per month. Others were never able to do so. Systematic exploration of such incentive plans is needed.

The Barrio outreach workers spend one-half time in outreach and on the average get 21 families per month in for screening. Using these figures and those noted earlier for Contra Costa, the following time estimates can be made for outreach with families:

	(1) Families Screened Per Month	(2) Monthly Outreach Hours Per Worker	(3) Families Screened Per Outreach Hour
Barrio	21	82.5	.25
Contra Costa	10	50.0	.20

The decimal fractions in the column (3) which result by the division of column (1) by column (2) converts to one family per four hours of outreach work for the Barrio, and one per five hours for Contra Costa. In sum, four to five hours can be taken as an estimate of the amount of time necessary per family for outreach.

In addition, direct outreach work with families can be effectively supplemented by working through various community agencies working with children and families in various organized activities such as schools, clubs,

churches, summer programs, and so on. Contra Costa has made effective use of this; however, there is a point of diminishing returns since such groups can be relatively quickly covered, and many, perhaps most, families eligible for EPSDT services do not belong to such organized groups. The major use of the community organizations approach is to increase program visibility and establish community credibility.

In the computer record kept for Contra Costa County, data exists about the siblings of children screened who have not shown for screening. The following comparison of ages reveals that many families who show for screening have additional children to be screened--who are generally older. If ways could be found to encourage these families to get the other children screened, the penetration rate could be increased with little additional effort.

A comparison by ages of the children in Contra Costa who were both screened and not screened.

Age	Screened		Siblings not screened (but families' have been contacted)	
	N	% of Total	N	% of Total
0-4	1558	47.5	301	14.4
5-11	994	30.3	849	40.7
≥12	728	22.2	936*	44.9
Total	3280	100.0	2086	100.0

* Of those ≥12 years of age, 64% were under age 17.

Conclusion

Working with captive population through schools or day care programs to deliver EPSDT services presents special problems not encountered by the more typical delivery programs, i.e., programs operated by local health departments.

(EPSDT services delivered by individual providers present a different set of contingencies and have not been considered here.) Given the principal method of funding EPSDT services, work with captive populations will not likely become widespread unless there is a great increase of cooperation between delivery programs and schools.

The Contra Costa project continues to collect data on children screened subsequent to missing their first appointments and those not subsequently contacted who may have come in for screening. At this point in the study, the findings indicate that:

1. Use of letters and telephones for case finding, though inexpensive, are limited in effectiveness. Too few (1/3) families have telephones, and letters do little more than inform. The phone calls showed a higher rate of refusal by clients to use the service.

2. Home visits which show concern and interest via health history taking and provision of health education, though more costly, is the most effective method of the several tried, that is, if the goal is to get children screened.

3. The results obtained by this case-finding experiment must be viewed in the light of the high commitment which the CHWs who carried out the work had for the method which proved most successful. But interest and enthusiasm are fundamental ingredients for most successful undertakings, and perhaps especially for EPSDT outreach.

4. It is estimated that four to five hours of case-finding field work per family be used for estimating outreach staffing requirements.

5. High penetration rates (number screened ÷ number eligible for screening) require high rates of contact, appointment scheduling, and kept appointments. From a marketing point of view, the data on each of these must be kept in order to determine appropriate strategies for increasing the penetration rate.

CHAPTER 9

CASE MONITORING: PROBLEMS AND PROSPECTS

If EPSDT is to accomplish its objective of prevention and reduction of chronic health conditions among children of low-income families, one basic requirement must be met. Those conditions detected by screening must be pursued by some monitoring mechanism which will, hopefully, bring each problem uncovered by screening to some satisfactory resolution. Thus far, the work of projects and data of HSRI makes it clear that it is a relatively easy task to organize and operate a screening program, but quite another to organize and operate a system which assures systematic and accurate monitoring so (1) that diagnosis and treatment is obtained for each problem, or (2) if (1) was not accomplished gives the reasons for this failure. Both of these are necessary for usefully precise program assessment. In fact, if these orders of information are not obtained, there is no way of evaluating some of the more fundamental issues of EPSDT, service outcomes, costs and program policies.

It is the purpose of this chapter to consider several aspects of case monitoring by (1) giving a brief review of relevant findings from the HSRI 1973 EPSDT Evaluation and Impact Study, and by (2) describing some operational problems and issues encountered by HSRI and the projects in the course of designing and operating a case-monitoring mechanism, and by (3) giving brief accounts of each of the projects' experience with monitoring.

Earlier Findings

In the 1973 study noted above, HSRI utilized Medicaid billing records, EPSDT screening records kept by screening agencies, and other sources such

as clinic records where diagnostic or treatment services might have been obtained. The results indicated that only 45 per cent of previously unknown conditions detected by screening get to an appropriate provider. Moreover, one-third of the conditions studied were completely lost to the screening programs; that is, there were no records to indicate what had happened to the children and their problems, and no staff members who knew about the cases. On the basis of those findings, it was recommended that low rates of problem resolution (getting into diagnosis and/or treatment and diagnosis and/or treatment completion) could be improved by devising a system for tracking each child and his problems, and that responsibility for this activity be placed in the hands of one staff member.

This process of tracking each problem to determine its outcome has been labelled case monitoring and should include, in addition to the data system and associated clerical activities, the provision of information, health education, and encouragement of families to not only see that their children obtain medical attention indicated as needed by screening, but also to provide health education and information to the end that they move effectively to utilize the medical services available to them.

Operational Problems

Chapter 3 has provided a description of the computerized system devised by HSRI for keeping account of screening outcomes and for facilitating case monitoring. It may be useful at this point to review some of the problems which emerged as the system approached operational status. The order of presentation does not imply importance.

Like most other data systems, this one depends upon data inputs from screening staff and other personnel. As is often the case in health and other

service oriented programs, delivery of services take precedence over record keeping. Screening projects must deal with the same phenomenon which tends to be exacerbated where emphasis is placed primarily on how many children are screened and little emphasis that needed treatment is acquired. Program success under such conditions is based on number screened, not how many children had problems brought to successful resolution. It must, in all fairness, be pointed out that part of this difficulty stems from the relatively low emphasis which EPSDT placed on follow-up and case monitoring in the early start-up stage. This, in turn, stemmed from the large effort required to get states underway on screening; and, in part, from a lack of experience and failure to anticipate the critical need for follow-up and monitoring.

Problems also arise from the variety of possible outcomes other than the highly ideal one which would occur as follows: mothers are notified that screening services are available and to bring their children to the screening agency, screening detects a problem, and the child is referred to a provider for diagnosis and/or treatment; the mother follows through by taking the child to the provider for the indicated services, and upon completion, either the provider or the mother reports to the screening agency that the problem is corrected or continues under treatment. Thus far, the evidence suggests that this pattern is not particularly common.

Among the deviations which occur at no small frequency to make outcome assessment difficult are the following: families move away or give incorrect addresses; some families fail for a variety of reasons to cooperate by taking their children to providers for diagnosis and treatment, and others do not have transportation for getting to providers. But faults by no means reside only with the families. Screening agencies, for various reasons, may fail to make

referrals, do not provide needed transportation, or fail to input data which activates the monitoring system, or are not able to follow up all problems because of large numbers of problems and a shortage of staff.

After the data system was operational for some time, certain technical issues began to emerge. Although there were numerous problems, one set in particular applied to case monitoring around the question of problem definition and disposition. Put differently, one principal function of case monitoring is to bring each problem to some determinate closure or resolution; hopefully, one reflecting successful treatment. The issues emerged first from an oversimplified anticipation of how things might work, and secondly from an imperative requirement to keep reporting procedures simple and at a minimum.

At the outset, it was agreed that the problem monitoring process would at some time declare each problem resolved or not resolved, and that this decision would be so recorded by a simple check mark at a specified position on the appropriate data form. As experience and data accumulated, it became evident that such decisions required answers to other questions, and that more information was needed if outcomes were to be described in meaningful and useful terms. A very early question was: how much time should be allowed after screening for a problem to be resolved by indicated medical attention? Previous HSRI research had suggested that if a child gets into treatment as a result of EPSDT screening, it will occur within three months.* To assure fully adequate time to allow each problem to be resolved, it was agreed that all problems not resolved within six months after detection be reviewed and declared unresolved without specifying what factors or events prevented its

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*One principal exception to this is that in some sections of the community, a longer time lapse is required for obtaining dental treatment.

medical resolution.

Experience soon revealed that this procedure did not provide sufficient managerial information. It failed to capture outcomes necessary for understanding what happens to all conditions detected by screening. For example, it provided no way of distinguishing problems declared false positives by diagnosis or retest from problems resolved by treatment. Similarly, screening often identifies and records conditions which are barely beyond "normal" limits, or "too minor" for referral or treatment, or which are essentially untreatable.* If such conditions are recorded, they must be disposed of if outcome statistics are to be accurate. Other questions arose around the issue: When is screening complete? Is it at the time of screening or only after confirmation of a finding by retest and/or diagnosis? But one project took the position that only conditions confirmed by retest or diagnosis constitute screening findings, and for awhile its reporting procedure conformed to this view. Other problems arise from the behavior of families. Some families move out of the screening area or give wrong addresses, making follow-up difficult or impossible. Some simply fail or refuse to cooperate by not taking their children to providers. If such cases are simply declared resolved under some broad rubric such as "administrative reasons," information vital to program operation and planning is lost.

Currently, a new reporting procedure worked out with the projects calls for outcomes to be reported at the time of resolution or not later than six months after screening by use of the following outcome categories:

1. Condition minor, treatment completed first visit, or presumed cured or inactive within ten days.

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*Such conditions raise the larger question: should such conditions be recorded as screening findings?

2. Treatment plan completed on subsequent visit.
3. Condition noted: treatment not advisable or warranted.
4. Suspected problem declared to be not a problem. [False positives.]
5. Condition still under treatment.
6. Condition noted, treatment not available or authorized.
7. Terminated due to moving, loss of eligibility or family finances.
8. Parent not cooperative after three contacts.
9. Coding error.

Case-Monitoring Experience

This section describes selected aspects of the case monitoring experience of the projects. Since a six-month period is allowed for each problem to reach a state of resolution (closure), the case monitoring data for the report period were not all in at the time of data analysis. For this reason, the quantitative findings given below are principally to illustrate what information the data system can provide on monitoring activities and results.

To the extent that a program's success is judged by the proportions of screening problems brought to some determinate solution, it is to that extent that a systematic procedure for keeping account of outcomes is needed. In the absence of such a procedure, the likelihood of determining to any precise extent what a program has accomplished is minimal. The system devised by HSRI for tracking problems and keeping account of outcomes is relatively straightforward and requires minimal staff time if case monitoring is actually being conducted and recorded. In what follows, data supplied HSRI by use of this system are used to construct two indexes useful for evaluating a program's monitoring effort and its monitoring effectiveness.

Indexing monitoring effort is shown in the following table:

INCLUDED FOR EXAMPLE ONLY

Project	Number of Reported, Referrable Problems	Number Reported As Monitored	Index of Monitoring Effort
Barrio	1,913*	958	0.49
Contra Costa	702	196	0.28
Cuba	88	69	0.78
NCDCA	396	242	0.61

The index of monitoring effort is shown in the right most column which is simply the proportion of problems which have received at least one follow-up effort after screening. These proportions indicate sharp monitoring effort differences among the projects; however, since the data are not complete, conclusions are not warranted at this time.

The index of monitoring effort is a general indicator, principally by implication, of how much attention or emphasis a project gives to follow-up. A more useful measure which may be called an index of monitoring effectiveness is the proportion of problems monitored which were brought to resolution by the expended effort. The word resolution in this context is roughly similar to categories 1, 2, 3, 4, 6, (and perhaps 5 if it appears that treatment will likely be completed) as described on the previous page. This may be illustrated as follows with the data on hand for the four projects:

Project	Number of Problems Monitored	Number Reported Resolved	Index of Resolution Effectiveness
Barrio	958	366	0.38
Contra Costa	196	116	0.59
Cuba	69	53	0.77
NCDCA	242	147	0.61

Comparison of the indexes for the same projects in this and the above

*The Barrio reported 2,023 problems, but on the basis of knowledge of the cases and "clinical" judgement, a number of the problems were declared not sufficiently significant to follow-up. Perhaps they should not have entered the problem system in the first place.

table suggest the potential usefulness of the indexes. For example, the Barrio effectiveness was 0.59. Cuba and NCDCA, on the other hand, had identical effort and effectiveness indexes. If differences such as those for Contra Costa and the Barrio Clinic were based on firm data, there would appear to be sufficient reasons to examine the monitoring processes of these projects.

A well-designed and operated monitoring program can make other adjustments which allow for more precise evaluation of the program's effectiveness. One adjustment is to eliminate all false positive screening findings prior to calculating the effectiveness index. By doing this, one arrives at an effectiveness index based on the proportion of "true" problems resolved. For the data utilized here, the number of reported false positive problems were 57, 19, 15, and 31, respectively, for the Barrio, Contra Costa, Cuba, and NCDCA. If these are removed from the number of problems resolved for each project and the effectiveness index recomputed, one has a measure of the "true" problems resolved. This adjustment produces the following indexes of effectiveness for "true" problems resolved by the four projects.

Project	Adjusted Index of Resolution Effectiveness
Barrio	0.34
Contra Costa	0.55
Cuba	0.70
NCDCA	0.55

Comparisons of these indexes of effectiveness with those in the proceeding table indicate a reduction of effectiveness for all the projects. Since false positives can occur from one or both of two reasons, poor or conservative screening, keeping account of false positives and making adjustment for them will give a more precise notion of monitoring effectiveness as well as screening.

The final index to consider is the combination of the monitoring effort and the resolution effectiveness, which may be called the case-monitoring effective-

ness index since it represents the outcome measure of the ratio of problems declared. As can be seen in the formula it is also the multiplicative combination of the previous five indices.

$$\text{CMEI} = \frac{\text{No. Problems Monitored}}{\text{No. Problems Declared}} \times \frac{\text{No. Problems Resolved}}{\text{No. Problems Monitored}}$$

$$= \frac{\text{No. Problems Resolved}}{\text{No. Problems Declared}}$$

To get the adjusted index, the false positives are subtracted from with the numerator and denominator. The results of all the indices are summarized in the following table:

Project	Problem Declared	Problem Monitored	Problems Resolved	Number of False Positive
Barrio	1913	958	366	57
Contra Costa	702	196	116	19
Cuba	88	69	53	15
NCDCA	396	242	147	31

Project	Monitoring Effort Index	x	Resolution Effectiveness Index	=	Case Monitoring Effectiveness Index
Barrio	.501	x	.382	=	.191
Contra Costa	.279	x	.592	=	.165
Cuba	.784	x	.768	=	.616
NCDCA	.611	x	.607	=	.371

Project	Adjusted* Monitoring Effort Index	x	Adjusted* Resolution Effectiveness Index	=	Adjusted* Case Monitoring Effectiveness Index
Barrio	.485	x	.400	=	.194
Contra Costa	.262	x	.548	=	.144
Cuba	.740	x	.704	=	.521
NCDCA	.578	x	.550	=	.318

*Adjusted to remove false positives.

In the preparation of the tables a decision was made to use the total problems declared during the reporting period as the base of the analysis rather than those declared prior to 3 months before the end of the reporting period. It is possible to do either and as time passes, the former cumulative data rates should become very close to the latter. However, since the cumulative rate used in this analysis represents only one year of data, and since we should allow at least one quarter from problem declaration to reported resolution, (realizing that some problems do not get monitored until 6 months after resolution according to the case-management system) the best that could be hoped for would be a CMEI of .75. A comparison of each project's CMEI to the maximum expected yields the following:

	CMEI	Per Cent of Maximum Expected Index
Barrio	.194	26%
Contra Costa	.144	19%
Cuba	.521	69%
NCDCA	.318	42%

If these differences between projects continue in future reports, where data will be more complete, the benefits of conducting EPSDT with "captive" populations and with very direct intervention in the diagnosis and treatment process will be shown. In addition, as the projects expand their case monitoring efforts, these indices should show great improvement.

With data such as that contained in the Common Data Base, there are other approaches which may be used to evaluate a monitoring system. By use of data captured through the problem resolution codes shown in the previous section of this report, other indexes may be produced to show in more detail how many screening problems of what sort are brought to what type resolutions in given

time periods.* Such information should prove useful to EPSDT program managers at all levels, including policy makers.

Project Monitoring Approaches and Problems

At the time the projects were funded there were, as is the case at present, no guidelines as to how follow-up and monitoring should be organized and conducted. None of the projects have reached a final answer for their programs. Many questions lack answers: for example, what should be the relative levels of effort as between case-finding and case-monitoring? How is a monitoring program best organized and conducted? Monitoring requires in most screening programs not only work with families, but also work with providers. What are the best approaches for working effectively with both sides of the equation to get families to providers and to obtain accurate information within reasonable time limits on diagnosis and treatment?

The Barrio Clinic provides diagnosis and treatment on site, and has had relatively good return of information from providers to whom children have been referred. The Clinic follows a practice of setting appointments for needed retesting, diagnosis and treatment via telephone or letters; however, experience has shown that the sooner after screening these appointments are made, the better the results. Since the Barrio Clinic provides much of the needed diagnosis and treatment, it should enjoy relatively successful monitoring and case resolution experience. One of the most critical problems it has faced in this regard is achieving a sound balance between case finding and case monitoring. Where a choice is necessary between the two activities, there is

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*To be able to do this depends, of course as always, upon accurate and honest reporting of data.

a tendency to favor case-finding on the rather sound logic that children must be gotten in for screening or no need for follow-up exists.

In the Contra Costa project, case finding and case monitoring is carried out by the Community Health Workers under the supervision of a nurse--the Project Coordinator. Monitoring of problems is carried out principally by telephoning families and providers to request outcome information. Something less than half the families have phones, however. This leaves the mail and home visits which do not appear to have been used to any great extent. Some difficulty has been experienced by the project in obtaining feedback from providers to whom children are referred for diagnosis and treatment. This problem is increased when the first provider refers a child to a second provider. Since the Community Health Workers carry out both case-finding and case-monitoring functions, the project, like the Barrio, has been faced with the issue of allocating effort between the two functions. The project is currently reassessing its case-monitoring program and priorities.*

The Cuba and NCDCA projects both screen children enrolled in school or day care program which should make follow-up relatively easy. At NCDCA, staff members and volunteers transport children to diagnosis and treatment providers. This constitutes a second advantage for good monitoring. Outcomes of diagnosis and treatment are essentially immediately available. The Cuba project, because of a sparsely located population, great distances, scant family transportation, and a virtual absence of telephones, has obvious obstacles to follow-up. It does have some advantages, however, which will no doubt result in an effective monitoring program. The advantages include some on-site treatment, and

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*Contra Costa is conducting a study testing alternative approaches to monitoring. The results of this work will be reported upon its completion.

the fact that the vast majority of the children referred with problems go to the Checkerboard Health Center Clinic with which the project is closely associated. A third factor is an increasing conviction of the necessity for follow-up. A quotation from a recent quarterly report of the project reflects this position and otherwise suggests that many so-called potentially positive resources for getting a job done do not automatically fall in place to get a job done. The report says:

> Another important segment of the summer was follow-up of dental problems. Arrangements were made to transport children several times a week during the summer months to the dental clinic for treatment of problems identified during earlier screening. A school district agreed to assist with transportation. Parents were contacted and agreed to bring children to the school where they could be then picked up and brought to the clinic. Arrangements were made with the dentist at the Cuba Clinic to set aside certain times each week for these children. An effort was made all summer to carry out this plan but only a few parents brought their children to the school, the school vehicle was never available as promised, and the dentist was less than eager to work on children when they were brought in, and the work was usually incomplete. It was obvious that new plans were needed if such a program was to be successful.
>
> Arrangements have now been made and are underway for a plan that is highly successful. The project has learned from experience to keep responsibilities for the logistics of treatment, etc., within the project as much as possible to assure the intended outcome.*
>
> The new dental follow-up/treatment plan includes modifications in the existing dental program at the Cuba Clinic. A pedodontist has been employed for a three-month period for four days each week. His chief convern is treatment of children referred by EPSDT. Because he will be employed only for a short time period, it is necessary to take full advantage of his service and devote full attention to assuring that as many children as possible get comprehensive treatment. He has agreed to try to complete the necessary work on each child within one or two sittings rather than over a period of time. This tends to assure that work done on each child is completed; otherwise, work done over a period of time is often left unfinished because of the diffi-fulty in getting the same child back.

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*Emphasis added.

Conclusion

In this chapter some suggestions for assessing levels of problem monitoring effort and effectiveness have been illustrated by use of not fully complete data drawn from the four demonstration projects. In addition, the monitoring approaches of the projects have been briefly described with attention to what appears to be the chief advantages and disadvantages experienced by each in the conduct of case monitoring. Findings from earlier HSRI research and observation of the monitoring experience of these four projects suggest two conclusions: many children screened by EPSDT programs have health conditions which have not been, and likely will not be, medically resolved, at least as an immediate consequence of the programs which screened them. As yet, this applies to many of the children screened by these demonstration projects which, relative to the typical EPSDT program, place considerable emphasis upon follow-up. But demonstration projects are for learning, not for perfect application of perfected "know-how." This leads to the second point: the lesson these projects seem to be teaching is perhaps what some would call a self-evident fact; that is, whatever value is derivable from early and periodic screening cannot be realized without effective means of bringing detected conditions to medical resolution.

Newly proposed federal regulations for documentation of EPSDT outcomes should give impetus to case monitoring in EPSDT programs. One problem remains, however. There is little known about ways of doing cost-effective case monitoring. HSRI, in cooperation with SRS Office of Research and Demonstration, is developing a series of demonstration projects exploring the effectiveness of different approaches. This work should provide useful knowledge and possible solutions.

CHAPTER 10

EPSDT COSTS: THE EXPERIENCE OF THE DEMONSTRATION PROJECTS

The most practical of all considerations in the operation of any program is the matter of economic costs. Budgeting for a successful EPSDT program calls for sound estimates for each of the major components (subsystems). Such estimates should be, in the ideal case, based on some relevant order of experience and systematic information derived from it. In the early stages of EPSDT start-up (1972-1973), information which could be relied upon for making sound cost projections was scarce. Although screening was, at the time, by no means a new concept, available knowledge about screening in the style called for by EPSDT had not been organized and fitted to the EPSDT program concept.

Difficulties still exist with respect to establishing a reasonable base for making cost estimates and projections as can be inferred from current expenditure reports by the States for EPSDT services delivered. In February, 1975, for example, reported costs per screen ranged from $0.14 to $164 per screen and an average of approximately $25.* Estimates based on data with variability implied by the range of such cost figures would be highly tenuous. Moreover, such cost figures raise questions about screening itself. With low comparability among programs with regard to costs, what can be said regarding the nature of input and output variables of such programs, both of which call themselves EPSDT programs?

The cost findings given in this chapter stem from four rather diverse projects with different sets of operating conditions and contingencies, for which careful attention has been given to the allocation of costs by subsystem.

*See footnote on first page of Chapter 3.

Although some marked differences appear among the projects and continued observation of these costs may indicate program elements that are not cost-effective, it is felt that these costs provide a basis for approximating costs necessary for sound and economically run screening programs.

The chapter starts with a discussion of the method used to allocate costs to the medical and developmental components of each project, and for each of these, the amount spent for each EPSDT subsystem. The subsystem costs per child screened are presented along with a discussion of differences observed among the projects. The chapter ends with a presentation of the total dollars spent and some suggested planning figures which may be useful for program planning and budgeting.

Allocation Method

HSRI receives three major cost related inputs from each project: vouchers for expenditures incurred each quarter, time sheets for each staff member showing the amount of time spent in each of the major subsystems, and the project's best count of essentially complete screens. The proportion of time spent in each subsystem is computed and applied to each staff member's salary to determine salary costs expended in each subsystem. Rent costs are allocated according to the approximate square footage of clinic space allocated to each activity. Other expenditures (such as supplies) are allocated according to use patterns by each subsystem. Expenditures not directly allocatable to a subsystem are assigned as indirect (or indeterminate) costs. Direct costs (or determinate costs) allocated to each subsystem are totalled, and the proportion of the total direct costs for each subsystem is calculated. These proportions are applied to the total indirect costs and then added to each subsystem cost. The

direct plus the indirect costs comprising the total subsystem cost is then divided by the number of children screened to get a unit or per capita cost.

Medical Component of the Projects

The costs presented for each subsystem of medical (as distinct from developmental) screening are based upon the following number of children screened.

Barrio	2,974
Contra Costa	3,861
Cuba	1,211
NCDCA	1,152

Except for NCDCA, these figures and the associated costs relate to the time period April 1, 1974 through March 31, 1975. The costs and number screened for NCDCA relate to the period January 1, 1974 through March 31, 1975 because most of its initial medical and developmental screening activity occurred during the first quarter of 1974.

Case-Finding Costs

The cost of outreach services per child screened for the four projects were as follows:

Barrio Clinic	$10.16
Contra Costa	17.54
Cuba	1.16
NCDCA	16.65

The principal factors contributing to the difference in outreach cost require comment. In the Barrio Clinic program, outreach workers administer the Denver Developmental test (part of the medical screen) for children six years of age and under, and take the family history in the home. These costs, as well as that incurred by transportation provided to the clinic for many families, are assigned as costs to outreach. Also, although the utilization

of the Barrio sick clinic is not contingent upon having one's children screened, the availability of these services and the 24-hour telephone service tends to stimulate and increase the interest of mothers in the program. Thus, costs of the sick clinic, which averages $12 per visit, could be assigned to outreach. If this is done, the Barrio's outreach costs rise to $22 per child screened.

The fact that Cuba's outreach costs are only $1.16 per child screened is explained by the fact that this project deals exclusively with a "captive" population, i.e., children enrolled in schools. The only costs for outreach are those generated by time spent in coordination and scheduling of screening, child histories, etc. with the schools, since parents are generally not contacted directly by the project. The costs allocated to outreach may be somewhat understated since there is no direct outreach program. Some staff time allocated to indirect costs may actually be a form of outreach activity.

NCDCA also deals with a "captive" population of day care children. Its relatively large cost for outreach per child screened arises from the rather excessive amount of effort required for coordinating screening schedules with school activities, and the fact that many home visits had to be made to obtain medical histories on children, and to obtain signed permission slips for taking children to the dentist for screening. Such factors negate the savings potentially inherent in working with a captive population. These conditions were, also in part, exacerbated by monophasic screening, i.e., screening for vision problems on one occasion, hearing on another, and so on. Steps are being taken in the (1975-76) year which should reduce the amount expended for outreach. Changes include use of a mobile clinic to the screening facility to the day care centers, describing the screening program to parents at the time they enroll their child in the day care program, and more effective scheduling of screening with day care schedules.

The Contra Costa outreach cost of $17.54 per child screened is probably a realistic figure for outreach in large, urban areas with an average or higher Consumer Price Index. Contra Costa outreach staff of highly skilled and experienced workers are paid approximately twice that paid the Barrio staff. In contrast to the Barrio which has suffered from turnover among its outreach personnel, Contra Costa has had no serious turnover. A planning figure for outreach, including transportation by use of a clinic bus or other means, would probably be on the order of $22 per child screened. The necessity of transportation was underscored at a meeting of the four projects in November, 1974, by unanimous agreement that NCDCA, Cuba, and Barrio Clinic could not operate effectively without transportation (station wagon, van, mini-van). Another way to state the cost would be approximately five man-hours of time for persons assigned to outreach activity.

Medical Screening Costs

The costs of medical screening (including registration, screening, discussing findings with parents, and completing records) were divided by the number reported screened to give the cost per child screened. As the following shows, the cost per screen for all but Contra Costa were nearly identical.

Barrio Clinic	$18.35
Contra Costa	40.00
Cuba, N.M.	17.76
NCDCA	18.75

The method of cost allocation inflated Contra Costa's costs for medical screening by $4 to $5 per child screened. Since Contra Costa has no developmental screening, all of its indirect costs allocated to screening were assigned to medical screening. For the other three projects, part of these costs went to developmental screening. Other factors contributing to higher Contra Costa costs were:

1. Greater time alloted to nurses to conduct the physical examination.

2. California law requires supervision by an on-site physician to double check problems referred, an additional cost factor not experienced by the other projects. (It may result in fewer false positives.)

3. Early in the project the screening personnel had idle time due to poor scheduling. For example, the Clinic was open from 8-11:30 A.M., but fewer people showed before 10:00 A.M. This situation is being corrected, but scheduling to minimize idle time in the screening clinic remains a difficulty.

4. Contra Costa does not make extensive use of volunteers. (The Barrio estimates that volunteers reduces its costs by ten per cent.)

5. Contra Costa does more retesting than the other projects which requires approximately 20 per cent of the total time spent in screening.

During the year, the Contra Costa show rate improved, more health aides were used in the screening, and the clinic hours adjusted. The costs per child screened dropped $7 between the first and last quarters of the report. The cost of screening will probably remain above $30 per child, however, and is a likely figure for planning screening programs. Another way to state the costs would be roughly the equivalent of three man-hours of screening personnel.

Case-Monitoring Costs

The cost for monitoring, i.e., tracking children and their problems through the diagnosis and treatment process may be examined in several ways: by averaging the total expenditures for monitoring over all children screened, or by averaging over the number of problems which could be possibly projected as having been resolved. These average costs per child screened for the projects were as follows:

	Cost Per Child Screened
Barrio Clinic	$ 4.69
Contra Costa	6.92
Cuba	6.85
NCDCA	16.41

To get from these average costs to relatively meaningful estimates for program planning and budgeting, we use the cost figures for Contra Costa and its Index of Monitoring Effort given in the chapter on case monitoring. This index, the ratio of problems followed-up to the total number of referrable problems reported in a given time, was .28 for Contra Costa. To move its effort toward 100 per cent would likely require an additional expenditure three times its current rate. Thus, a figure of $20 per child screened is suggested. As monitoring becomes better organized, these costs may be reduced. This would be similar to 4 man-hours per child screened.

An alternate way of viewing case-monitoring costs would be to consider the number of problems the projects probably have resolved based upon available data. This can be computed by multiplying the case-monitoring effectiveness index (CMEI) or a per cent of maximum possible described in the chapter in case-monitoring by the number of problems found in screening. Then the case-monitoring subsystem costs are then divided by the projected number of problems resolved to get a projected cost per problem resolved as follows:

INCLUDED AS AN EXAMPLE ONLY

Project	(CMEI/.75)	Problems Found in Screening	Projected Problems Resolved	Case-Monitoring Dollors	Projected Cost Per Problem Resolved
Barrio	.2678	1913	512	13948	27.24
Contra Costa	.1700	2031	345	26718	77.44
Cuba	.6900	907	626	8295	13.25
NCDCA	.4200	396	166	18904	113.88

These numbers may be greatly distorted due to different stages of processing of data from each project at the time of analysis and, therefore, the assumption

that the results already processed accurately reflected the entire population may not be true.

Diagnosis and Treatment Costs

Diagnosis and treatment of conditions found is done either on-site or by providers to whom the children are referred. These costs are for the most part not borne by the projects, but by Medicaid for eligible children. Since determination of those costs charged to Medicaid for these services is a complex and time-consuming task, costs of off-site treatment services have not yet been obtained. The average on-site cost for diagnosis and treatment for all children screened by each project was:

Barrio Clinic	$ 7.45
Contra Costa	2.00
Cuba	6.16
NCDCA	11.09

Use of the total number of children screened to obtain an average measure was necessitated because the data system, to maintain simplicity and reduce clerical work at screening sites, does not capture medical data about on-site treatment. The problems diagnosed and treated on-site in Contra Costa and NCDCA include primarily minor skin problems and upper respiratory infections with the M.D. present at screening prescribing a medication for treatment. To get more precise notions as to the amount of diagnosis and treatment costs generated by screening will require additional effort to obtain accurate on-site costs and costs billed to Medicaid.

In its Phase II report HSRI, on the basis of data for conditions diagnosed and treated as a result of EPSDT screening, made an estimate of $35 per problem found in screening by assuming one problem per child screened for both medical and dental diagnostic and treatment costs. This estimate also assumed case

monitoring which gets children into treatment. Without such case monitoring, the cost is estimated to drop to about one-third or $13 per child screened since only about one-third will likely get to treatment. At this point, there seems to be no reason to change these estimates except perhaps to point out that states which have not previously provided dental care under their Medicaid programs may have a large backlog of serious conditions to deal with. If so, dental services may inflate the cost per child well above the estimate. The treatment costs for treatment provided by outside providers has not been analyzed, but the $35 per child will be used as an interim estimate.

The experience of the projects focuses attention on a number of issues. Two among these, dental care and on-site treatment, warrant a brief comment. The need for an adequate, cost-effective dental screening and treatment programs has not been fully addressed by the National EPSDT program. The projects experience considerable frustration because of a lack of resources for dealing with the problems detected. In Contra Costa County where resources are relatively good, many children have to wait as long as six months to see a dentist. Treatment resources are fewer in Cuba. The Barrio Clinic attempted to use a dental hygienist in its program, but was discouraged from doing so by the dental society. In the face of obvious need and few resources for meeting them, is a tendency for screening personnel to sense some frustration or indifference about dental problems. A strong preventive dental program, including screening and treatment, is a prime target for immediate and high national priority.

As for on-site treatment, it might be argued, and perhaps rather soundly from one point of view, that programs designed to screen large numbers of children quickly and economically, should not provide on-site medical treatment. However, to refer children to a slow and uncertain system of care for conditions

which can be easily attended at the time of detection does not appear to be a sound practice either psychologically or economically. It seems highly probable that the performance of a screening personnel is related to the sense of closure which comes from knowing that the problems detected by screening will receive proper attention. The more immediate and visible the closure, the greater the satisfaction. Although the psychological factor indicates a cost savings through more highly motivated personnel, a more direct and greater savings can be had by providing treatment for minor conditions on site. Doing so will assure that many children will receive care which they may not otherwise obtain and reduce the costs of case monitoring. The cost of detecting conditions which are not treated is a loss which also constitutes a cost. However, in many environments, the screening program must act as an adjunct to (not a competitor with) the ongoing medical care system in order to maintain provider cooperation for conducting treatment in the entire program.

Developmental Assessment and Treatment Costs

Only two of the projects give heavy emphasis to developmental screening and treatment. Some 74 per cent of the Cuba budget and 60 per cent of the NCDCA budget went for these purposes. In contrast, the Barrio Clinic percentage was 14.0 while Contra Costa, until recently, had not done routine developmental screening. In what follows, cost figures are given for Cuba and NCDCA. Since both projects are engaged in developing new instruments or modifying existing ones while screening and providing various remedial or therapeutic services, it is not a particularly sound procedure to show costs per unit of outcome, say either for number of screens, number of children screened, or for number of problems found. However, there has been considerable interest in these projects, their findings, screening experiences, and costs. Insofar as we

know, these are the only available cost figures on developmental screening by EPSDT programs. For these reasons they are presented, but with caution.

Unless otherwise noted, the average costs are based on the number of developmental screens administered, not the number of children screened. NCDCA screened 440 children, but most of the children were tested twice to give an average of 740 full-screen equivalents. The 740 screens will then be used to compute outreach and screening costs at National Child Day Care, but the case monitoring and diagnosis and treatment costs are computed on a basis of 440 children. The Cuba project administered a total of 648 screens which is composed of 396 original screens and 252 rescreens. The 740 NCDCA and the 648 Cuba screens are used for calculating average costs per screen.

Outreach (case-finding) Costs: The average case-finding cost per developmental screen for the two projects was:

Cuba	$10.03
NCDCA	6.60

Both projects conduct the developmental screen separately from the medical screen. This separation requires two sets of outreach effort for planning and scheduling for developmental screening as well as medical screening. A large proportion of the Cuba outreach costs arise from having to transport personnel over long distances to the schools. Neither of the projects typify what may be called the usual EPSDT program operated by health departments. Both their instruments and some of their screening procedures need to be tested under more typical conditions and in conjunction with medical screening in the more usual setting of EPSDT screening.

Developmental Screening Cost: The average expenditure per screen for each project was:

Cuba	$31.32
NCDCA	41.40

The time required for actual screening a child averages about 20 minutes each for both programs. The higher cost at NCDCA stems principally from personnel costs which relfect higher pay scales and cost of living in Washington as well as salary differentials resulting from higher education levels of the personnel used. NCDCA employs all college trained personnel while the Cuba screening staff is composed of high school graduates who work under supervision of trained specialists. College trained personnel are used so that they may function in both screening and treatment with relatively little supervision. For both projects, the cost per screen is higher, perhaps double per screen, because of research and experimentation with tests and screening procedures. Therefore, a planning figure for an operating program which includes careful evaluation of findings would be approximately $15. This is roughly 1.5 man-hours per child screened including time for interpretation of results and preparation of forms.

Developmental Case-Monitoring Costs: Expenditures for monitoring children with developmental problems identified by screening when averaged over the total number of children screened (440 for NCDCA) are shown below.

Cuba	$14.73
NCDCA	39.13

The costs include primarily personnel time spent in checking an diagnosis and treatment outcomes, keeping forms updated and informing parents and/or teachers of the outcome of screening and treatment. The 440 children were used in NCDCA because, although 740 screens were given, approximately 440 different children were involved. For Cuba, these costs are about twice that for monitoring its medical problems; and the NCDCA costs are two and one-half times greater than that for monitoring its medical problems. This is accounted for by several factors.

Many medical problems are, relatively speaking, quickly resolved, and their resolution more easily recognized. Developmental problems, in contrast, take greater amounts of time for explanation and discussions with parents and teachers, in finding and making arrangements for treatment, and the time required for reaching resolution is more extended. For a planning figure the weighted average of $25 per child screened will be assumed. This is equivalent to 2.5 man-hours per child screened.

Diagnostic and Treatment Costs: The per capita expenditures for diagnostic and treatment services for developmental conditions also contain cost of services for some children with emotional and behavioral problems. The average cost for each project was:

Cuba	$82.51
NCDCA	100.24

These are gross costs averaged over the total number of children screened and could be considered the equivalent of 8-10 man-hours. Ideally, it would be possible to break the costs down to types of conditions and services rendered; however, the complexities of obtaining the necessary information for doing so make this impossible. Although the per capita costs are relatively similar, further comparisons are difficult for a number of reasons. For example, NCDCA, uses results from its screening instrument for making diagnostic decisions while Cuba provides a rather full-scale psychological diagnostic battery for those children who need diagnostic attention. It is estimated that 30 dollars of the Cuba cost goes for such testing. NCDCA operates two therapeutic classrooms for children with various emotional and behavioral problems. This program operates under the general direction of a psychiatrist and has an average daily attendance of 14 children (seven per classroom). The children spend one-half day in the

regular day care program and one-half day in the therapeutic classroom. Each child remains in the program for an average of about six months. The annual expenditure for the therapeutic nursery school was $36,792 for an average of $1,314 each for 28 children, or an annual rate of $2,618 per child for full-time treatment if a child were in treatment for a year instead of 6 months. If this cost is removed from the $100.24 per capita cost of NCDCA, its average is reduced to $50.56 per child based on 440 children screened. This is near the Cuba cost without its diagnostic expenditures which is $52.51.

Barrio Developmental Assessment Costs: This program uses the Denver Developmental test as a part of its medical screen for younger children. Recently the Wide Range Achievement Test (WRAT) for older children was adopted for older children, the cost for administering these tests has not been segregated from costs associated with the medical screen. However, for the 12-month period covered by this report the Barrio Clinic expended $26,217 on diagnostic and remedial services for 50 children whose principal problems were language and learning disabilities. The above figure includes retesting children who failed the Denver, transportation costs to the treatment program, and staff costs for getting children to appropriate diagnostic and treatment services provided by other community agencies. It does not include time contributed by volunteers. The $26,217 averaged over the 1,305 children tested with the Denver amounts to $20 per child. Since there is a waiting list for the program, this figure can by no means be considered adequate for meeting the more obvious needs. It may serve as a minimum figure for estimating cost for interim care and for facilitating the admission of children into other community programs more specifically designed to meet their diagnostic and treatment needs.

Estimating Costs

In this section, four sets of estimates are submitted as first approximations as to costs which may be anticipated for EPSDT programs. The first set is the costs associated with medical-dental screening, diagnosis and treatment only, or the standard program; the second set of estimates is for a developmental screening program only, i.e., operated independently of a medical-dental screening program; the third set of estimates uses the same cost data as that for the first two estimates to show costs for diagnosis and treatment only which may be anticipated for a medical-dental-developmental program on a cost per child with problem basis; and a final set of two estimates to show costs of (a) additional dental treatment when added to the standard program and (b) expected costs for a program which, in addition to the increased dental treatment, provides developmental screening, diagnosis and treatment. All these estimates assume a program operated by local health departments with a sound outreach program, whether internal or external* to it, screening 2,000 to 4,000 children annually, and providing effective case monitoring.

Medical-Dental Estimates: The estimates are for a program dealing only with medical and dental screening, diagnosis and treatment with minimal dental care. All the following estimates are on a per child screened basis and are projected on the basis of, but not equivalent to the costs incurred

*The essential condition is that workers be trained for the job which should be their prime function, not something done in addition to their prime responsibility. The same worker could probably carry out both outreach and case-monitoring functions to add variety and greater meaning to their work.

by the projects. Also shown are the estimated man-hour equivalents, which could serve as a basis for future planning regardless of rates of inflation or location in the country.

	$ Costs 1974 Dollars Average Cost of Living Area	Approximate Man-Hours Equivalents
Case-Finding	$ 22.00	5
Medical Screening	30.00	3
Case Monitoring	20.00	4
Diagnosis and Treatment	35.00	.33
Total	$107.00	

The $35 for diagnosis and treatment is based on earlier HSRI findings in its study of state operated programs. The figure assumes monitoring and only minor dental care (extractions and restorations) in an area where a dental program has previously existed. Programs in areas where dental care has not been provided the target population may find that dental costs alone may approach or exceed $55* per child screened if orthodontic work is excluded. The inclusion of orthodontic work may increase the dental cost per child screened to $150 per child screened.

From what we have been able to observe, a state program not spending on the order of $100 to $110 per child screened (fully allocated costs) for the full spectrum of EPSDT needs close scrutiny for explanation of its success or for its weaknesses. Costs much below these levels, even when a good job is being done, may result from a failure to fully account for all expenditures, i.e., some costs may be absorbed by other programs. Another possibility is that the program does not have a fully adequate pay scale. The key to assessing a program's effectiveness, however, is to examine the rate at which eligibles are

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*Based on a study of the Texas State Dental program for children under age 21. Recent analyses show that the costs may have increased to $90 per child screened.

being screened and the extent to which detected problems are being diagnosed and treated. The $107 figure assumes approximately one problem (medical and dental) per child, screening of 2,000-4,000 children per year, case monitoring resulting in nearly 100% of problems being monitored and resolved.

Developmental Assessment Estimates: While it is too early to accurately project cost estimates for a program which screens, diagnoses, and treats children with developmental and emotional problems, some effort at this is in order. The following estimates, derived principally from the Cuba and NCDCA programs indicate a cost of $150 per child screened. The elements which go into such a program and the costs of each are highly variable. These two programs experience some increased costs by the fact that the developmental screening effort is conducted separately from the medical screen, and then additional outreach and follow-up costs are incurred. These costs, however, are relatively minimal in comparison with costs associated with treatment. With the caution in mind, the following estimates are given for a program operated independently of a medical screening program:

	1974 Dollars Average Cost of Living	Man-Hour Equivalent
Case-Finding - Developmental	$ 10.00	2.5
Screening - Developmental	15.00	1.5
Monitoring Developmental Problems	25.00	2.5
Diagnosis and Treatment (Developmental only)	50.00	5.0
Total	$100.00	
Treatment of Emotional Problems	50.00	5.0
Grand Total	$150.00	

The $50 shown for treatment of emotional problems identified by screening does not include costs for those conditions requiring individual psychotherapy or hospitalization. How many children will require what orders of remedial or

therapeutic care is problematic. Elsewhere in the report, it has been suggested that the percentage may range from 10 to 30 per cent. But this will depend upon criteria used for deciding such questions.

Estimates for Medical and Developmental Diagnosis and Treatment: The costs presented above are given on the "per child screened" basis to aid program planners. Total costs of the components of the program can be computed by multiplying the estimates given by the number expected for screening. An alternative format for presentation will be used in the following discussion when the costs of treatment are presented. Instead of showing the cost per child screened, the costs for treating a child with problems are shown. The modifications used to arrive at the estimates were presented in various parts of this chapter and are summarized as follows:

Suggested Planning Figures for Costs of Medical and Comprehensive Developmental Diagnosis and Treatment for Children Primarily Between Ages 5 and 11

	Cost Per Child with Problems
Medical and dental*	$ 56
Additional dental costs if no previous state dental program	$ 30****
Developmental**	$ 130
Emotional (not requiring psychiatric care)***	$ 1300

To the extent that the age of distribution of children screened in an EPSDT program differs from those in the demonstration projects, and because the specific resources and funding mechanisms in the locality differ, the short

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*Assumes one-half of the children have problems and 80% get treated.

**Based on NCDCA experience. Assumes that 18%, 17% and 5% of the children screened need one-to-one prescriptive teaching for 15, 40 and 80 one-half hour sessions, respectively.

***Based on NCDCA experience with children already in a day care association. The children were given play therapy under the direction of a consulting psychiatrist and the parents were visited weekly by a social worker.

****Based on Texas EPSDT dental data and includes exam, cleaning, and fluoridation. It does not include orthodontic corrections.

term treatment costs that a comprehensive EPSDT program will add to ongoing Medicaid costs will vary from the estimates presented here.

Estimates for Different Levels of EPSDT Services: The standard program estimated above at a cost of $107 per child includes all required elements of our EPSDT program. However, it includes funds only for dental extraction and some restorations for children in those states which have been providing dental services. The developmental screen is a gross assessment of the examiner, based on a developmental history. In the table which follows, the estimated costs for each element in the standard program is given in the left column. The second column provides an estimate for a program which emphasizes dental services to the extent of adding prophylaxis and fluoride treatment for each child screened and adds some treatment in a state without a pre-existing dental program. As can be seen from the table, costs for this additional treatment is placed at $20 per child, for a total cost of $127. This figure does not include orthodontia which could increase dental costs by as much as $150 per child screened.

The third column adds a full developmental program to the program in the second column. This estimate calls for $15 for screening for developmental and emotional problems with the use of a standard child history and one or more screening instruments. An additional $20 is also added for case monitoring, including feedback to parents, teachers, etc., and $100 to cover developmental and emotional treatment costs. The treatment for emotional costs does not include individual psychotherapy, residential treatment, or inpatient treatment.

COSTS OF SCREENING IN 1974 DOLLARS

	Cost Per Child Screened Standard Program	Cost Per Child Screened With Additional Dental Treatment	Cost Per Child Screened With Additional Dental Treatment and Developmental Services
Outreach (case finding)	$22	$22	$22
Screening	30*	30	(+15) 45
Case Monitoring	20	20	(+20) 40
Diagnosis and Treatment	35	(+20) 55**	(+100)155
	$107	$127	$262

The above figures show that EPSDT programs can be implemented which encompass various levels of coverage. The demonstrations have allowed the specification of options available and the projection of costs estimates of these options even though any one of them have not offered full coverage.

The costs presented above are the total costs to the federal, state and local governments. The federal Medicaid matching rate will determine the proportion of costs borne by the state. If the medical matching rate under Title XIX is 53 per cent, and the administrative and health related supportive services (case finding and case monitoring) for which funds are now available at a 75 per cent federal match, then the cost of the standard program to a state may be computed as follows:

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*Includes all mandatory components of the screen including a gross developmental assessment -- add $5.00 if a Denver or a WRAT is used.

**The $55 is based on a 1973-74 data base. The State of Texas is currently estimating $90 per child screened for dental. Therefore, the actual total may be closer to $172.

(1) Subsystem	(2) State Matching Rate	(3) Total Cost Per Child Screened	(4)* State's Share
Case Finding	.25	22	5.50
Screening	.47	30	14.10
Case Monitoring	.25	20	5.00
Diagnosis and Treatment	.47	35	16.45
		$107	$41.05

*Column (2) times column (3)

If a program does not provide what is described as a standard program, then the costs should be substantially less than $107; however, the fully allocated costs of a minimal screening program will likely never be less than $50 per child for case finding, screening, case monitoring. Any organization which plans to conduct screening at a cost less than $100 to $110 per child will find itself frustrated due to the lack of resources. Data on the long-term impact on Medicaid costs are not yet available. If EPSDT is successful, short-term costs should shift from expenditures for hospital and emergency room use toward services of dentists, optometrists, and audiologists, and eventually, decreased hospitalization costs should occur.

Conclusion

The costs experienced by these projects must be taken for what they are: sets of dollar figures which emerged out of four different programs which organized their activities out of a nearly infinite variety of possibilities for doing the job each set out to do, and all within limited budgets and numerous restraints on what could and could not be done. A program that uses only professionals obviously will cost more than one which finds an effective mix of personnel with different knowledge and skill levels. None of the four projects would likely contend that it has found the perfect combination, but each seems to have constituted itself relatively well for doing what it proposed to do. It remains to be seen how well their experience can serve as a guide for other programs and most particularly as a basis for estimating costs for the various elements of EPSDT screening.

The estimates advanced above are made with full recognition of the risk involved in moving from such an experience base to estimates for state EPSDT programs. The risk is ventured in response to rather widespread interest and expressed need for some guidelines. The estimates are given as first attempts to provide some minimal guide as to what costs are likely to be for a relatively adequate EPSDT program and each of its subsystems.

We feel somewhat more at ease about the cost estimates for the medical and dental parts of an EPSDT program, although they are first approximations and subject to further research and modifications. We are less at ease about the estimates for developmental assessment and associated costs. To our knowledge no state EPSDT program has fully addressed the issue of developmental

assessment in terms of what the EPSDT concept entails with respect to diagnostic and treatment services. The cost as well as the outcomes of such a program cannot be adequately anticipated in the absence of experience which more or less conforms to the realities under which screening and related services are likely to occur. Projects exploring these realities are much needed and highly recommended.

Directions for the future indicate a need for greater emphasis on case-monitoring activities, studies of longer range Medicaid costs, the effect of periodic rescreening, cost-effective ways of working with schools, performing developmental assessment, cost-effective ways to encourage a greater utilization of preventive health services, and ways of conducting dental screening and treatment which ensures adequate detection and correction of problems.

APPENDIX A

Barrio Clinic Forms

Upon completion by the screening agency, a copy of all but the Physician's Problem Sheet is forwarded to HSRI. The Physician's Problem Sheet remains in the child's clinic record.

Starred items (**) on the forms indicate data captured by the HSRI computer as part of the Common Data Base.

FAMILY INFORMATION SHEET

Family BCCHCC Number* ☐☐☐☐

Mother's Name* (Caretaker) ☐☐☐☐☐☐☐☐☐☐☐☐ (Last) ☐☐☐☐☐☐ (First)

Address* ☐☐☐☐☐ (Number) ☐ ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (Street) Zip Code ☐☐☐☐☐

Census Tract ** ☐☐☐☐ Phone ☐☐☐☐☐☐☐ Date* ☐☐☐☐☐☐ (Mon Day Yr)

Mother's Age ** ☐☐ Education (No. of yrs.) ** ☐☐ Medicaid Number ** ☐☐☐☐☐☐☐ Time on Medicaid (Months) ** ☐☐☐

Father's Age ** ☐☐ Education (No. of yrs.) ** ☐☐ Father's Name _____ Father's Occupation _____

Transportation to Clinic
- Own Car ☐
- Friend/Relative's Car ☐
- Walk ☐
- Clinic Bus ☐

Aide _____

Aide's Number ☐☐

Referred by:
- Welfare ☐
- Walk-in ☐
- Agency ☐
- Aide ☐
- Neighbor
- Flyer
- Other
- Specify

- Apartment ☐
- House ☐
- Buying ☐
- Renting ☐

Monthly Payments _____

No. of Rooms _____ (Exclude bathroom & kitchen)

** How many people live in the house? _____

** How many people under 21 live in the house? _____

** How long have you lived at your current address? _____

How long have you lived in San Antonio? _____

How many times have you moved in the past 5 years? _____

** Who lives in the home? (Check all that apply)
- Adult Male
- Adult Female
- Grandparent
- Other Relatives
- Other Non-Relatives

Who is child's head of household?
- Mother ☐
- Father ☐
- Age _____
- Grandparent ☐
- Other Relative ☐
- Other (Specify) _____

** Who is child's health decision maker?
- Mother ☐
- Father ☐
- Grandparent ☐
- Other Relative ☐
- Other (Specify) _____

** Source of medical payments
- Medicaid
- Private insurance
- Group insurance
- Cash
- Hospital district
- Federal project
- Other

Caretaker's current health (in his opinion) **
- Healthy ☐
- Some problems ☐
- Several chronic problems ☐

**Caretaker's health history
- Healthy, seldom ill
- Some health problems

COMMENTS

CHILD HEALTH QUESTIONNAIRE

Child's Name ____ (Last) ____ (First)

BCCHCC* Number ** ____ (Family) (Child)

** Male ☐ Female ☐

Child's Medicaid Number ** ____

** Date of birth ____ (Mon. Day Yr) Age ____

Medical care (past 12 months)**

Number of	checkups	sick visits
Well child conference		
Private physician		
Outpatient clinic		
Emergency room		
Dentist		
Optometrist/ophthal.		
Other		
Screening program		
Inpatient admissions		

nk = None 99 = Unknown

Child Health Information**

Previous Physicals (past 12 months)

(check all appropriate)

Hearing test	☐	Lead screen	☐
Vision test	☐	Sickle cell test	☐
Lab work	☐		
Unclothed exam	☐		
School physical	☐		

Child's Health Status** (caretaker's opinion)

Healthy ☐
Minor problems ☐
Frequently sick ☐

Feeding:

Method: Breast ☐ Formula ☐

Age (mon.)

Age when weaned ____
Ate with spoon ____
Drank from Glass ____

School Performance

Grade ____

Problems: ____

Prenatal and Birth Hx:

Birth Weight ____

ty ____ Hospital ____

	√ if normal	Complications
Pregnancy	☐	
gth of labor	☐	
Delivery Normal ☐ C Section ☐	☐	
dition at birth	☐	
Jaundice	☐	
Course in hospital	☐	

Development:

	Age (mon.)
Held up head	
Rolled	
Sat alone	
Walked	
Control bowel	
Control bladder	
Said words	
Sentences	

Habits:

	Y	N
Bedwetting		
Nail Biting		
Thumb sucking		
Breath holding		
Nervousness		
Temper tantrums		
History of Pica		

ious Medical History

Was child ever severely ill? If yes, when, and with what? ____

Was child hospitalized? If yes, where? When? For what? ____

hild under medical care for any illness or taking medicines? ____

ily Data:

	Age	Height	Sex
Father			
her			
Siblings			

Family Illnesses:

Allergies: ____

Learning Disability: ____
Diabetes: ____
Heart Disability: ____
B/P: ____
TB: ____
Convulsions: ____
MR: ____
Worms: ____
Anemia: ____

Causes of Death of Family Members:

Social Factors

	Y
Hot Water:	
No. Bedrooms	
Marital Status	
M. ____ D. ____ S. ____	
Father in the home	
yes	no

* All items, except Comments Section, captured in data base.

BCCHCC SCREENING SHEET

BCCHCC Number [ ][ ][ ][ ][ ][ ] (Family / Child)

No. of Entries in Health Records since last Physical Exam _____

✓ if this is a screening step completion [ ]

Date [ ][ ] Mon [ ][ ] Day [ ][ ] Yr

Child's Name [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] (Last / First)

Age ____

✓ if not req.	Step	Staff code (if per.)	If not done, why?	Results	✓ if abnl.	Problem is: (✓ all that apply)	Seriousness (circle one)	History (✓ one)	Days w/o treat.	Treat'd ?	✓ if no fol up needed
	01 Measurements		Uncooperative [ ] Unavailable [ ] Other [ ]	Ht _____ % Wt. _____ %	[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	02 Hematocrit		Uncooperative [ ] Unavailable [ ] Other [ ]		[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	03 Differential		Uncooperative [ ] Unavailable [ ] Other [ ]		[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	04 Urinalysis		Uncooperative [ ] Unavailable [ ] Other [ ]	ph _____	[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	05 TB test		Uncooperative [ ] Unavailable [ ] Other [ ]		[ ]					yes no	
	06 Hearing		Uncooperative [ ] Unavailable [ ] Other [ ]	L _____ R _____	[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	07 Vision		Uncooperative [ ] Unavailable [ ] Other [ ]	Left _____ Right _____	[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	
	08 Denver		Uncooperative [ ] Unavailable [ ] Other [ ]	Pass [ ] Fail [ ]	[ ]	Referred [ ] Chronic [ ] Symptom. [ ]	1 2 3 4 5	New Known Under Care		yes no	

Screening Step	Staff code (if per.)	Not Performed: Uncoop.	Not Performed: Staff/equip. unavail.	Not Performed: Other	✓ if problem suspect.	COMMENTS
09 Head & neck		[ ]	[ ]	[ ]	[ ]	
10 ENT		[ ]	[ ]	[ ]	[ ]	
11 Dental		[ ]	[ ]	[ ]	[ ]	
12 Chest		[ ]	[ ]	[ ]	[ ]	
13 Cardiac		[ ]	[ ]	[ ]	[ ]	
14 Abdomen		[ ]	[ ]	[ ]	[ ]	
15 Genitalia		[ ]	[ ]	[ ]	[ ]	
16 Extremities		[ ]	[ ]	[ ]	[ ]	
17 Skin		[ ]	[ ]	[ ]	[ ]	
18 Neurological		[ ]	[ ]	[ ]	[ ]	
19 Eyes		[ ]	[ ]	[ ]	[ ]	

Height _____ Weight _____ Blood Pressure _____ Temp _____ Nurse's signature _____

HEALTHINESS RATING

(Circle most appropriate rating)

Current	1	2	3	4	5	6	7	8	9
In 6 months, all problems treated	1	2	3	4	5	6	7	8	9
In 6 months, without any treatment	1	2	3	4	5	6	7	8	9

Immunization Status

Before initial screen (except if current)

After initial screen

Not Available [ ]

DPT

OPV

Measles

Mumps

Rubella

How many contacts will be required to bring child to "current"? _____

Data recorded by physician on this page are transferred to the next page.

PROBLEM SHEET Name _____

Date	Complete at Time of Problem Definition	Problem/Treatment Summary
✓ When problem resolved ☐	Problem History (✓ one) Completely new to mother & clinic ☐ Previously known but not under care ☐ Previously under care ☐ Problem is: Referred ☐ Not Referred ☐ Chronic ☐ Acute ☐ Symptomatic ☐ Asymptomatic ☐ Problem Seriousness (circle one) 1 Mild 2 3 Moderate 4 5 Severe If possible to determine, how long has this problem gone without adequate treatment? _____ weeks	nurse:
✓ When problem resolved ☐	Problem History (✓ one) Completely new to mother and clinic ☐ Previously known but not under care ☐ Previously under care ☐ Problem is: Referred ☐ Not Referred ☐ Chronic ☐ Acute ☐ Symptomatic ☐ Asymptomatic ☐ Problem Seriousness (circle one) 1 Mild 2 3 Moderate 4 5 Severe If possible to determine, how long has this problem gone without adequate treatment? _____ weeks	nurse:
When problem resolved ☐	Problem History (✓ one) Completely new to mother and clinic ☐ Previously known but not under care ☐ Previously under care ☐ Problem is: Referred ☐ Not Referred ☐ Chronic ☐ Acute ☐ Symptomatic ☐ Asymptomatic ☐ Problem Seriousness (circle one) 1 Mild 2 3 Moderate 4 5 Severe If possible to determine, how long has this problem gone without adequate treatment? _____ weeks	nurse:

GENERAL COMMENTS

** All items are put in data base.

BCCHCC* NUMBER [ ][ ][ ][ ][ ][ ] (Family / Child)

PROBLEM DEFINITION SHEET

DATE [ ][ ][ ][ ][ ][ ] (Mo / Day / Yr)

CHILD'S NAME [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] (Last) [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] (First)

PROBLEM CATEGORY [ ][ ] PROBLEM DESCRIPTION [ ]

Problem History (✓ one)
- Completely new to mother and clinic ☐
- Previously known but not under care ☐
- Previously under care ☐

Problem is:

Referred	☐	Not Referred	☐
Chronic	☐	Acute	☐
Symptomatic	☐	Asymptomatic	☐

Problem Seriousness (circle one)

1 2 3 4 5

Mild Moderate Severe

If possible to determine, how long has this problem gone without adequate treatment?

_____ weeks

	Y	N
Is problem treated?	☐	☐
Is problem resolved?	☐	☐
Is further referral/treat. req.?	☐	☐

Specify _____

Is a follow-up visit required? ☐ ☐

If so, when? [ ][ ][ ][ ][ ][ ] (Mo / Day / Yr)

Referral Treatment

Provider Type:

Dentist ☐ Private Physician ☐ Hospital ☐
BCCHCC Dentist ☐
Specialist ☐ Other ☐ Provider Name

(Complete This Section ONLY If Problem is Resolved at This Time)

Required Care		Child's Response to Care	
Received	☐	Responding	☐
Not Received	☐	Not Responding	☐

Status
- Resolved ☐
- Not Resolved ☐

✓ If Problem is NOT significant enough to follow-up to resolution: ☐

PROBLEM CATEGORY [ ][ ] PROBLEM DESCRIPTION [ ]

Problem History (✓ one)
- Completely new to mother and clinic ☐
- Previously known but not under care ☐
- Previously under care ☐

Problem is:

Referred	☐	Not Referred	☐
Chronic	☐	Acute	☐
Symptomatic	☐	Asymptomatic	☐

Problem Seriousness (circle one)

1 2 3 4 5

Mild Moderate Severe

If possible to determine, how long has this problem gone without adequate treatment?

_____ weeks

	Y	N
Is problem treated?	☐	☐
Is problem resolved?	☐	☐
Is further referral/treat. req.?	☐	☐

Specify _____

Is a follow-up visit required? ☐ ☐

If so, when? [ ][ ][ ][ ][ ][ ] (Mo / Day / Yr)

Referral Treatment

Provider Type:

Dentist ☐ Private Physician ☐ Hospital ☐
BCCHCC Dentist ☐
Specialist ☐ Other ☐ Provider Name

(Complete This Section ONLY If Problem is Resolved at This Time)

Required Care		Child's Response to Care	
Received	☐	Responding	☐
Not Received	☐	Not Responding	☐

Status
- Resolved ☐
- Not Resolved ☐

✓ If Problem is NOT significant enough to follow-up to resolution: ☐

PROBLEM CATEGORY [ ][ ] PROBLEM DESCRIPTION [ ]

Problem History (✓ one)
- Completely new to mother and clinic ☐
- Previously known but not under care ☐
- Previously under care ☐

Problem is:

Referred	☐	Not Referred	☐
Chronic	☐	Acute	☐
Symptomatic	☐	Asymptomatic	☐

Problem Seriousness (circle one)

1 2 3 4 5

Mild Moderate Severe

If possible to determine, how long has this problem gone without adequate treatment?

_____ weeks

	Y	N
Is problem treated?	☐	☐
Is problem resolved?	☐	☐
Is further referral/treat. req.?	☐	☐

Specify _____

Is a follow-up visit required? ☐ ☐

If so, when? [ ][ ][ ][ ][ ][ ] (Mo / Day / Yr)

Referral Treatment

Provider Type:

Dentist ☐ Private Physician ☐ Hospital ☐
BCCHCC Dentist ☐
Specialist ☐ Other ☐ Provider Name

(Complete This Section ONLY If Problem is Resolved at This Time)

Required Care		Child's Response to Care	
Received	☐	Responding	☐
Not received	☐	Not Responding	☐

Status
- Resolved ☐
- Not Resolved ☐

✓ If Problem is NOT significant enough to follow-up to resolution: ☐

APPENDIX B

Barrio Problem Card in use prior to September 30, 1975

Barrio Problem Card
(In Use Prior to September 30, 1975)

Number	Last	First	Problem	Res. Only

A. **REFERRAL/TREATMENT**

	Yes	No
Is Problem Treated?	☐	☐
Is Problem Resolved?	☐	☐
Is Further Referral/Treat. Req?	☐	☐
(Specify) _____		
Is Follow-up Visit Required?	☐	☐

When? ☐☐☐☐☐☐ Mon Day Yr

Discussion of Other Findings

_____

_____

_____

If referred, indicate provider

Dentist	☐	Specialist	☐
BCCHCC Dentist	☐	Other	☐
Private Physician	☐	(Specify Name)	
BCH or RBG	☐		

B. **PROBLEM RESOLUTION STATEMENT**
(Complete only when problem is resolved)

Person Following Up

Nurse	☐
Nurse aide	☐
Physician	☐
Staff	☐
Other (specify) _____ *(e.g. volunteer)*	☐

Source of Information

Contact with physician	☐
Contact with physician's staff	☐
Patient's caretaker	☐
Other	☐
(specify) _____	

Follow-up Method

Personal interview	☐
Telephone	☐
Mail	☐
Other	☐
(specify) _____	

Required Care

Received	☐
Not received	☐
Referred	☐

Child's Response to Care

Responding	☐
Not Responding	☐

Status

Resolved	☐
Not Resolved	☐

If status not determined, why?

_____

_____

_____

APPENDIX C

Contra Costa Problem Sheet

A five part NCR form used by Contra Costa. Physicians to whom children are referred get copy five--a heavy paper self-mailer, which physicians are requested to fill out and mail to the project at the Contra Costa County Health Department. Copy two is sent by the project to HSRI at the time a problem is recorded; copy five comes to HSRI when a final problem status is reached. If the problem is not resolved within six months, copy five is forwarded to HSRI describing its status at the time.

* Sent to HSRI.

☐ ADD ☐ DELETE

PATIENT'S LAST NAME	FIRST NAME	F/I NO.	DATE MO DAY YR

02537

DEAR DOCTOR,

THE ABOVE CHILD HAS RECEIVED A SCREENING EXAMINATION AND A PROBLEM IS SUSPECTED AS SHOWN BELOW

PROBLEM HISTORY

☐ COMPLETELY NEW TO CARETAKER ☐ PREVIOUSLY KNOWN BUT NOT UNDER CARE ☐ PREVIOUSLY UNDER CARE

REASON FOR REFERRAL _____

_____

OTHER COMMENTS _____

Project-Child File Copy

☐ ADD ☐ DELETE

PATIENT'S LAST NAME	FIRST NAME	F/I NO.	DATE MO DAY YR

02537

DEAR DOCTOR,

THE ABOVE CHILD HAS RECEIVED A SCREENING EXAMINATION AND A PROBLEM IS SUSPECTED AS SHOWN BELOW

PROBLEM HISTORY

☐ COMPLETELY NEW TO CARETAKER ☐ PREVIOUSLY KNOWN BUT NOT UNDER CARE ☐ PREVIOUSLY UNDER CARE

REASON FOR REFERRAL _____

OTHER COMMENTS _____

PLEASE ANSWER THE FOLLOWING QUESTIONS AND RETURN IN THE MAIL.

XAMINATION DATE _____

1. WHAT WAS YOUR DIAGNOSIS OF REFERRED PROBLEM _____

. IS THE DIAGNOSED CONDITION (CHECK ON SCALE YOUR EST.)

1 — 2 — 3 — 4 — 5

ILD MODERATE SEVERE

3. IS THE DIAGNOSED CONDITION

CHRONIC	ACUTE	SYMPTOMATIC	ASYMPTOMATIC
☐	☐	☐	☐

4. IF POSSIBLE TO DETERMINE, HOW LONG HAS THIS PROBLEM GONE WITHOUT ADEQUATE TREATMENT?

_____ WEEKS.

☐ CAN NOT BE DETERMINED ☐ INSUFFICIENT INFORMATION TO DETERMINE

5. WAS THE PROBLEM TREATED AT THE DIAGNOSTIC VISIT? ☐ YES ☐ NO

IF NO, WAS IT REFERRED? ☐ YES ☐ NO

IF NOT REFERRED, WHY NOT TREATED?

_____

6. WAS PROBLEM RESOLVED AFTER TREATMENT ☐ YES ☐ NO

7. IF ADDITIONAL VISITS ARE NECESSARY, WHEN DO YOU EXPECT RESOLUTION OF PROBLEM. DATE:

IF FOLLOW-UP CARE IS REQUIRED AND THE HEALTH DEPARTMENT CAN AID YOU IN SUCH AREAS AS HELPING PATIENT IN KEEPING APPOINTMENTS, SUPPORTING YOUR HOME TREATMENT REQUIREMENTS OR OTHER AREAS, PLEASE CHECK HERE ☐

PERSON FOLLOWING-UP		REQUIRED CARE		PATIENT'S RESPONSE TO CARE		PHYSICIAN'S PHONE
STAFF PHYSICIAN	☐	RECEIVED	☐	RESPONDING	☐	
TAFF NURSE	☐	NOT RECEIVED	☐	NOT RESPONDING	☐	
THER STAFF	☐	REFERRED	☐			

OURCE OF INFORMATION		METHOD OF FOLLOW-UP		STATUS	
ONTACT WITH PHYSICIAN	☐	PHONE	☐	RESOLVED	☐
CONTACT WITH PHYSICIAN'S STAFF	☐	MAIL	☐	NOT RESOLVED	☐
ATIENT'S MOTHER	☐	PERSONAL INTERVIEW	☐		
THER (SPECIFY)	☐	OTHER (SPECIFY)	☐		

STATUS UNDETERMINED, WHY _____ COMMENTS: _____

REFERRAL PROVIDER (CHECK APPROPRIATE RESPONSES)

LOCATION		TYPE	
ON SITE	☐	GP OR PED	☐
PUBLIC	☐	OTHER MEDICAL SPECIALIST	☐
PRIVATE	☐	OTHER HEALTH PROFESSIONAL	☐

FORM D-K56 2-74

** Sent to the Doctor

☐ ADD ☐ DELETE

PATIENT'S LAST NAME	FIRST NAME	F/I NO.	DATE MO DAY YR

02537

DEAR DOCTOR,

THE ABOVE CHILD HAS RECEIVED A SCREENING EXAMINATION AND A PROBLEM IS SUSPECTED AS SHOWN BELOW

PROBLEM HISTORY

☐ COMPLETELY NEW TO CARETAKER ☐ PREVIOUSLY KNOWN BUT NOT UNDER CARE ☐ PREVIOUSLY UNDER CARE

REASON FOR REFERRAL _____

OTHER COMMENTS _____

PLEASE ANSWER THE FOLLOWING QUESTIONS AND RETURN IN THE MAIL.

EXAMINATION DATE _____

1. WHAT WAS YOUR DIAGNOSIS OF REFERRED PROBLEM _____

2. IS THE DIAGNOSED CONDITION (CHECK ON SCALE YOUR EST.)

1 — 2 — 3 — 4 — 5

MILD MODERATE SEVERE

3. IS THE DIAGNOSED CONDITION

CHRONIC	ACUTE	SYMPTOMATIC	ASYMPTOMATIC
☐	☐	☐	☐

4. IF POSSIBLE TO DETERMINE, HOW LONG HAS THIS PROBLEM GONE WITHOUT ADEQUATE TREATMENT?

_____ WEEKS.

☐ CAN NOT BE DETERMINED ☐ INSUFFICIENT INFORMATION TO DETERMINE

5. WAS THE PROBLEM TREATED AT THE DIAGNOSTIC VISIT? ☐ YES ☐ NO

IF NO, WAS IT REFERRED? ☐ YES ☐ NO

IF NOT REFERRED, WHY NOT TREATED?

_____

6. WAS PROBLEM RESOLVED AFTER TREATMENT ☐ YES ☐ NO

7. IF ADDITIONAL VISITS ARE NECESSARY, WHEN DO YOU EXPECT RESOLUTION OF PROBLEM. DATE:

IF FOLLOW-UP CARE IS REQUIRED AND THE HEALTH DEPARTMENT CAN AID YOU IN SUCH AREAS AS HELPING PATIENT IN KEEPING APPOINTMENTS, SUPPORTING YOUR HOME TREATMENT REQUIREMENTS OR OTHER AREAS, PLEASE CHECK HERE ☐

DISCUSSION OF ANY OTHER DIAGNOSES YOU FOUND

TO MAIL: FOLD ON ARROWS, FOLDING TOP DOWN, THEN REMOVE TAPE COVERING AND FOLD BOTTOM UP.

APPENDIX D

Revised (September, 1975) Barrio Problem card. HSRI periodically forwards one of these cards to the agency for each problem not resolved at the time of screening. Upon receipt of the card, the status of each problem is reviewed and reported to HSRI on the card.

Revised Barrio Problem Card

BCCHCC No. Name Description Compl. Date Resolution Only

SIDE ONE: For screening retest or a "Rule Out" (If problem resolution only, Turn to back.)

	YES	NO
Was child retested?	☐	☐
Were initial results confirmed?	☐	☐
Was child referred?	☐	☐

If referred, where: (note name)

Check Box

1. ☐ Private Dentist _____
2. ☐ Private Physician _____
3. ☐ BCH or RBC Clinic _____
4. ☐ BCCHCC Dentist _____
5. ☐ Specialist _____
6. ☐ Other _____

Verbal Description of Findings for Retests or Rule Outs
(Always write something here.)

Follow-Up Date ☐☐☐ (Mo. Day Yr.)

Staff Code ☐☐

SIDE TWO: Problem status (Complete when problem is terminated or by completion date on side one.)

CHECK ONLY ONE BOX ON THIS SIDE

Resolved:

1. ☐ Condition minor, treatment completed 1st visit, or presumed cured or inactive within 10 days.
2. ☐ Treatment plan completed on subsequent visit.
3. ☐ Condition noted: Treatment not advisable or warranted.
4. ☐ Suspected problem declared to be not a problem.

Unresolved

5. ☐ Condition still under treatment.
6. ☐ Condition noted, treatment not available or authorized.

Administrative Termination

7. ☐ Terminated due to moving, loss of eligibility or family finances.
8. ☐ Parent not cooperative after 3 contacts.
9. ☐ Coding error

Verbal Description of Status:

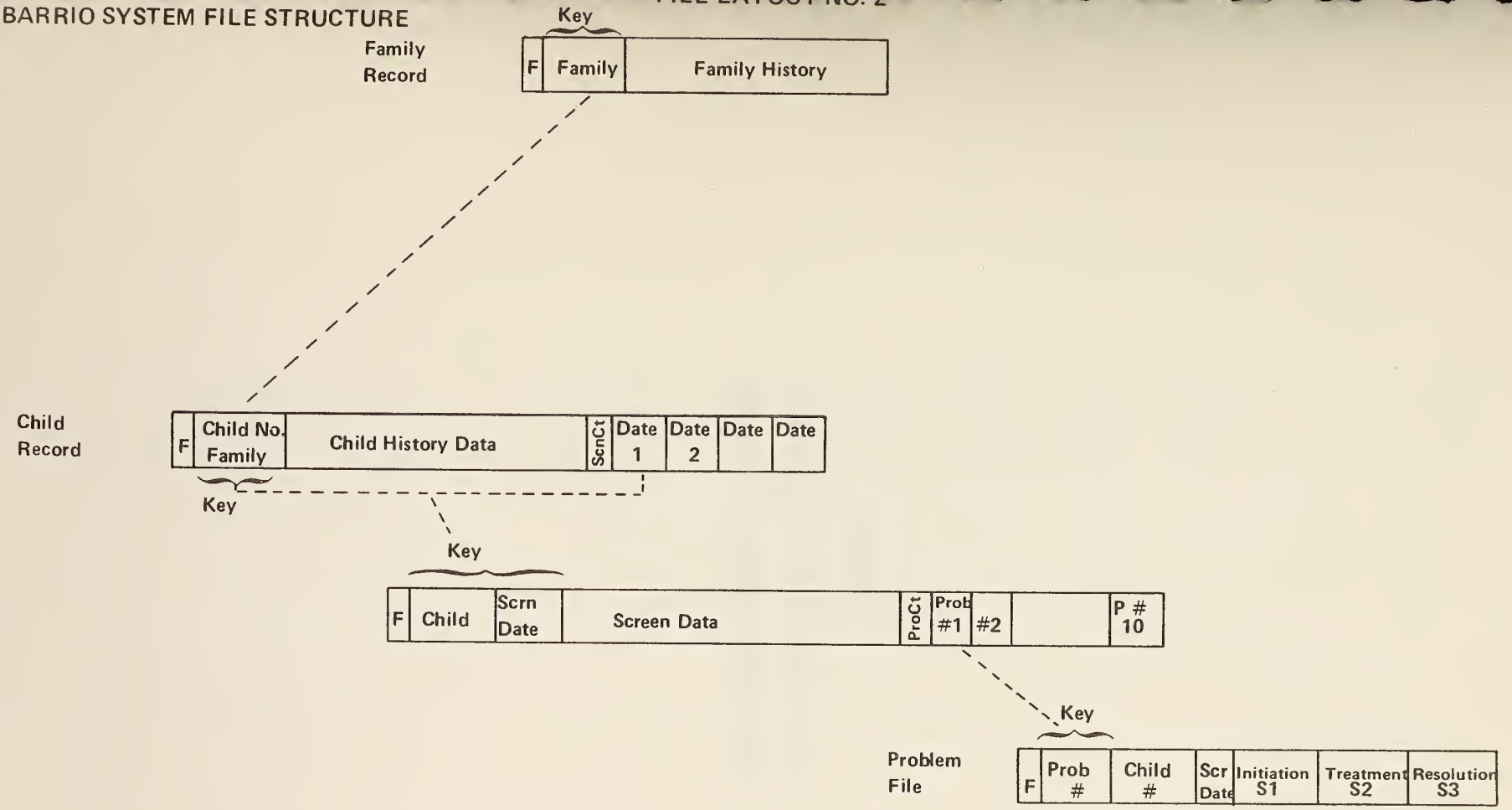
Staff Code ☐☐

APPENDIX E

Current Barrio Computer System File Schematic

NEW BARRIO SYSTEM FILE STRUCTURE

FILE LAYOUT NO. 2



APPENDIX F

Barrio Old Fixed-length Record

Master File Layout Description

Barrio System File Layout

File Layout #1 shows the file layout of each periodic screen on the computer tape master file in the Barrio Clinic. Many of the items are self-explanatory, but this page will explain the codes for the indicated variables shown on the file layout. The family history items, in this system are kept on a separate tape and are only merged when necessary.

Bytes	Item	Code
1	Delete or inactive code	I = means case is inactive. Hx FF = to delete the entire case. 0 = active.
2-5	Family number	Unique number assigned to each family.
6-7	Child specific number	A two digit code attached to the family number.
8-9	Screen number	The sequence in screening which this record indicates. (i.e. 1, if the original screen 2, if the 1st periodic)
10-23	Last name of child	
24-33	Child's first name	
34	History flag	0 = no history in 1 = history in
35	Type	0 = child record 1 = family record
36	Sex	1 = male 2 = female
37-47	Medicaid number	
48-53	Date of birth (MM, DD, YY)	
54-89	Medicare utilization in past 12 months as reported by the child's health caretaker (Some of these would seldom be used but are on the form, so space was provided. [E.R. for a check-up.])	
	Number of visits in the past 12 months to:	
54-55	Well child clinic for check-up	

56-57	Well child clinic for a sick visit
58-59	Private M.D. for a check-up
60-61	Private M.D. for a sick visit
62-63	Outpatient clinic for a check-up
64-65	Outpatient clinic for a sick visit
66-67	Emergency Room for a check-up
68-69	Emergency Room for a sick visit
70-71	Dentist for a check-up
72-73	Dentist for a sick visit
74-75	Optometrist for a check-up
76-77	Optometrist for a sick visit
78-79	Other for a check-up
80-81	Other for a sick visit
82-83	Screening clinic for a check-up
84-85	Screening clinic for a sick visit
86-87	Inpatient hospital for a check-up
88-89	Inpatient hospital for a sick visit.

90-96 History of steps of a screening physical in the past 12 months for:

90	Hearing	0 = none 1 = had one
91	Vision	
92	Lab work	
93	Unclothed Exam	
94	School physical	
95	Lead screen	
96	Sickle cell test	

97 Health status of the clinic according to the child's health caretaker

1 = healthy
2 = minor problems
3 = frequently sick

98	Ethnicity	0 = Mexican-American 1 = Other (99% are Mexican-American)
99	Code for whether or not to ignore the screen when building statistical tapes	0 = OK 1 = no data
100	Last screen code showing whether or not the screen represented by this record was the most recent	0 = not the last screen 1 = last screen
101-102	Problem count--the number or problems found in the screen	
103-104	Screening count--only in there on the original screens--the number of screens the child has on record	
105	An empty space - available for new codes	
106-107	Number of entries in the health record (i.e. number of visits in total)	
108-113	Screen date (month, day, year)	
114-170	Screening elements:	

Each 3-digit space contains room for the following:

1st digit: Staff — A 1 digit staff code to indicate the type of personnel doing it, if the step was performed.

Nursing Steps 01 - 08	Physician Steps 09 - 19
1 = RN	1 = Dr. Guerra
2 = LVN	2 = Dr. Riojas
3 = Aide	3 = Dr. Rodgers
4 = Staff	4 = Dr. Yoo
5 = Student	5 = PNP
6 = Other	6 = Temporary M.D.
9 = Unknown	9 = Unknown

2nd digit: Why step not performed — A 1 digit code to indicate generally why the step was not performed at the time of first screening

1 = child uncooperative
2 = staff equipment unavailable
3 = other
4 = not needed

3rd digit: Abnormality present or not at the first screen test

1 = abnormal (positive screening finding)
0 = normal (negative screening finding)

The staff type, why not performed, and results for each of the following:

114-116	measurements (height, weight, vital signs)

117-119	hematocrit	
120-122	differential	
123-125	urinalysis	
126-128	T.B.	
129-131	hearing (VASC audiometer)	
132-134	vision	
135-137	Denver	
138-140	head and neck	
141-143	ENT	
144-146	dental	
147-149	chest	
150-152	cardiac	
153-155	abdomen	
156-158	genitals	
159-161	extremities	
162-164	skin	
165-167	neuro	
168-170	eyes	
171-173	Height - in inches	
174-176	Weight - in pounds	
177	Healthiness rating at present	
178	Healthiness rating in 6 months with treatment	
179	Healthiness rating in 6 months without treatment	
180	Immunization records available?	1 = not available 0 = available
181-185	Immunization status (in terms of "current for age") When the child first appears for screening on that day.	
181	DPT (Diptheria, Pertussis and Tetanus)	0 = not current 1 = current

182	OPV (oral polio)	
183	measles	
184	mumps	
185	rubella	
186-190	Immunization status (in terms of "current for age") after the screening day.	
186	DPT	0 = not current 1 = current
187	OPV	
188	measles	
189	mumps	
190	rubella	
191	Number of contacts (individual visits) needed to make the child current	
192	Code for whether or not to use the problem record information	0 = OK, use it 1 = ignore, no data
193	Suspense type	
194-199	Suspense data (month, day, year) This is generated by the computer as requesting treatment info in 2 months and follow-up resolution of the problem in 6 months unless a specific follow-up date is submitted by the project	
200-207	S1 date: The date the problem was found in screening.	(month, day, year)
208	S1 diagnosis: The diagnosis code as indicated at the time of screening one of 46 categories developed by HSRI.	
209-228	A verbal description of the screening finding.	
229	History of the problem found	1 = completely new 2 = previously known but not under care 3 = already under care
230	Referred or not?	1 = referred 2 = not referred
231	Chronic or acute?	1 = chronic 2 = acute

232	Symptomatic (plainly visible upon visual or tactile inspection) vs. asymptomatic (displaying no visible symptoms)	1 = symptomatic 2 = not symptomatic
233	Seriousness rating -- A rating for that specific problem in terms of being mild, moderate, or severe case of that condition	
234-235	Time the problem had gone without treatment -- in weeks	
236-241	S2 date in (month, day, year) indicates the day the problem cards were entered to the computer system indicating the treatment received	
242	Was the problem treated or education given?	1 = yes 2 = no
243	Was the problem resolved?	1 = yes 2 = no 3 = false positive 4 = no treatment possible 5 = not significant enough to follow-up 6 = no show, refused service 7 = bad code only 8 = followed by another provider 9 = ineligible
244	Further treatment necessary?	1 = yes 2 = no
245	Follow-up visit needed?	1 = yes 2 = no
246-251	Suspense date by which follow-up should be accomplished--entered by clinic staff	(month, day, year)
252	Provider type to whom referred	1 = private dentist 2 = private physician 3 = hospital 4 = BCCHCC dentist 5 = specialist 6 = other
253	Follow-up needed?	0 = follow-up 1 = no follow-up needed

254-255	Diagnosis code for other or S2 diagnosis	Two digit code based on HSRI groupings of problems
256-275	Verbal description of the S2 diagnosis or other diagnoses found.	
276-281	Date that the S3 (resolution card) was entered to the computer.	(month, day, year)
282	Type of person conducting the follow-up	1 = nurse 2 = aide 3 = physician 4 = staff 5 = other
283	Source of the information concerning follow-up problem resolution status	1 = physician 2 = staff 3 = child's health caretaker 4 = other
284	Method of following	1 = interview 2 = phone 3 = mail 4 = other
285	Required care received?	1 = received 2 = not received 3 = referred
286	Responding to care?	1 = yes 2 = no--not responding
287	Problem status--resolved?	1 = yes, resolved 2 = not resolved 3 = false positive 4 = no treatment possible 5 = not significant enough to follow 6 = no show, refused service 7 = bad code only
288	Reason status unknown (no longer coded--so actually on empty space)	
289 on	Space for 11 more problems with the same information that was coded in Bytes 192 through 233	

APPENDIX G

Developmental Screening Forms for Cuba

The first seven pages are the forms in use during this report period.
The last four pages are the forms instituted in September, 1975.

* Forms used prior to September, 1975.

PSYCHO - EDUCATIONAL SCREENING SCORE SHEET

II

Name _____ _____ (Last / First)

Test Date _____ (Yr Mon Day)

Identification Number _____ (Family) _____ (Child)

Sex Male ☐ Female ☐

Grade K B 1 2 _____ (School)

Birth Date _____ (Yr Mon Day)

Ethnicity N S A O _____ (Society, if other)

Time to give test (min.) _____

Test Conditions 1 (Very Poor) 2 3 4 5 (Ideal)

Age _____ (Yr Mon Day)

SECTION (Circle One Number Each)	L								H
1. Intellectual Functioning	1	2	3	4	5	6	7	8	9
2. Visual Motor Perception	1	2	3	4	5	6	7	8	9
3. Language Facility	1	2	3	4	5	6	7	8	9
4. Emotional Adjustment	1	2	3	4	5	6			

SOCIOGRAM

- Star ☐
- Isolate ☐
- Refused to choose ☐
- Not done ☐
- No. times chosen: 1st choice ☐ 2nd choice ☐

1. INTELLECTUAL FUNCTIONING (positive indicators)

Testor _____

Time _____ : _____

a. HFD

- ____ smile
- ____ good facial detail
- ____ good clothing detail
- ____ good hand detail
- ____ good proportion
- ____ neck
- ____ profile
- ____ joints
- ____ movements
- ____ action

Indicators	Weighting
3-10	7-9
1-2	4-6
0	1-3

No. of indicators _____

Weighted Score _____

b. Picture Completion
Raw Score _____
Scaled Score _____
Weighted Score _____

c. Block Design
Raw Score _____
Scaled Score _____
Weighted Score _____

Language:
English ☐ Spanish ☐ Navajo ☐ Eng-Spanish ☐ Eng-Navajo ☐

2. VISUAL MOTOR

Testor _____

S.D. from the Mean	Weighting
Minus more than (1) S.D.	7-9
Plus or minus (1) S.D.	4-6
Plus more than (1) S.D.	1-3

Raw Score _____ Weighted Score _____

3. LANGUAGE FACILITY (English)

Wechsler Vocabulary

Testor _____

Sealed score	Weighting
14 or more	7-9
13	4-6
6 or less	1-3

Raw Score _____

Sealed Score _____

Weighted Score _____

4. EMOTIONAL ADJUSTMENT

(negative indicators - use either a or b)

Testor _____

a. HFD

- ____ asymmetry of limbs
- ____ slanting figure
- ____ tiny figure
- ____ tiny head
- ____ short arms
- ____ long arms
- ____ arms clinging to body
- ____ big hands
- ____ hands cut off
- ____ grotesque figure

Omissions

- ____ eyes
- ____ mouth
- ____ body
- ____ legs

Indicators	Weighting
0-1	4-6
2 or more	1-3

Number of negative indicators _____

Number of omissions _____

Total number of indicators _____

Weighted score _____

b. Bender Gestalt

- Confused order ☐
- Wavy line ☐
- Dashes for circle ☐
- Increasing size ☐
- Large size ☐
- Small size ☐
- Fine line ☐
- Overwork ☐
- Second attempt ☐
- Expansion ☐

Indicators	Weighting
0	4-6
1 or more	1-3

Time to administer Bender Gestalt _____

Number of indicators _____

Weighted score _____

4. c. Behavioral Observations

Easily distracted	1	2	3	4	5	Very Attentive
Withdrawn	1	2	3	4	5	Aggressive
HFD very immature looking	1	2	3	4	5	HFD very mature looking
HFD teeth, angry looking	1	2	3	4	5	HFD smiles, lacks hostility
Drawing quality Impoverished	1	2	3	4	5	Rich

Hypoactive	1	2	3	4	5	Hyperactive
Non-verbal	1	2	3	4	5	Very verbal
Resistant to testing	1	2	3	4	5	Very cooperative
Little praise needed	1	2	3	4	5	Extreme need for praise
Poor rapport	1	2	3	4	5	Rapport easily established

SPECIAL NOTES

1. Grooming

Unkempt	1	2	3	4	5	Clean, well groomed

2. Does child wear glasses?
   Yes ☐
   No ☐

3. Handedness
   Left ☐
   Right ☐
   Mixed ☐

4. Any obvious medical problems? Yes ☐ No ☐

   Explain _____

TEACHER

Teacher's name _____

Teacher's rating of child

1. Emotional Adjustment

Poorly Adjusted	1	2	3	4	5	Well Adjusted

Compare teacher's response to test results

	Comments	Agrees	Disagrees
2. Intellectual	_____	☐	☐
3. Visual motor	_____	☐	☐
4. Language	_____	☐	☐
5. Emotional	_____	☐	☐
6. Sociogram	_____	☐	☐

Teacher Receptivity: Took notes? Yes ☐ No ☐

1. Use teacher will make of information

Little or no use	1	2	3	4	5	Extensive use

2. Comments on teacher response to feedback _____

STATUS	Yes	No
Further needs	☐	☐
Rescreening required	☐	☐
Areas _____		
Diagnostic testing required	☐	☐
Priority testing indicated	☐	☐

Comments:

PSYCHO - EDUCATIONAL SCREENING SCORE SHEET (Form B)

me ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐☐☐☐ Test Date ☐☐☐☐☐☐
Last First Yr Mon Day

ntification mber ☐☐☐☐☐ ☐☐ Sex Male ☐ Grade Birth Date ☐☐☐☐☐☐
Family Child Female ☐ 3 4 5 _____ School Yr Mon Day

Ethnicity
S A O _____ Society, if other

Time to give test (min.) ☐☐

Test Conditions 1 2 3 4 5 (1 = Very Poor, 5 = Ideal)

Age ☐☐☐☐☐☐
Yr Mon Day

SECTION (Circle One Number Each)	L								H
1. Intellectual Functioning	1	2	3	4	5	6	7	8	9
Visual Motor Perception	1	2	3	4	5	6	7	8	9
3. Achievement (word recognition)	1	2	3	4	5	6	7	8	9
Emotional Adjustment	1	2	3	4	5	6			

SOCIOGRAM
- Star ☐
- Isolate ☐
- Refused to choose ☐
- Not done ☐
- No. times chosen: 1st choice ☐ 2nd choice ☐

INTELLECTUAL FUNCTIONING

tester ☐☐

	Indiv. Adm.	Group Adm.
A-P raw score		
CA		
A		
Discrepancy		
T		
Weighted score		

MA 24 mos. above CA (24+)
MA 18 mos. above CA (18 - 23)
7 MA 12 mos. above CA (12 - 17)
6 MA 6 mos. above CA (6 - 11)
MA same as CA (0 - 5)
MA 6 mos. below CA (6 - 11)
3 MA 12 mos. below CA (12 - 17)
2 MA 18 mos. below CA (18 - 23)
MA 24 mos. below CA (24+)

b. Picture Completion
w Score ☐☐
caled Score ☐☐
Weighted Score ☐

c. Block Design
Raw Score ☐☐
Scaled Score ☐☐
Weighted Score ☐

2. VISUAL MOTOR

tester ☐☐

. from the Mean	Weighting
Minus more than (1) S.D.	7-9
s or minus (1) S.D.	4-6
s more than (1) S.D.	1-3

	Indiv. Adm.	Group Adm.
or score		
Weighted score		

3. ACHIEVEMENT

tester ☐☐

(wide range — word recognition)

Present grade ☐ Raw score ☐☐
Grade equivalent ☐☐ Wtd. score ☐
Discrepancy ☐

9 GE 24 mos. above GL (24+)
8 GE 18 mos. above GL (18 - 23)
7 GE 12 mos. above GL (12 - 17)
6 GE 6 mos. above GL (6 - 11)
5 GE same as GL (0 - 5)
4 GE 6 mos. below GL (6 - 11)
3 GE 12 mos. below GL (12 - 17)
2 GE 18 mos. below GL (18 - 23)
1 GE 24 mos. below GL (24+)

4. EMOTIONAL ADJUSTMENT

tester ☐☐

a. Draw-A-Person

Poor integration	☐	Big hands	☐
Shading, face	☐	Hands cut off	☐
Shading, body, limbs	☐	Legs together	☐
Shading, hands, neck	☐	Genitals	☐
Asymmetry of limbs	☐	Monster, grotesque	☐
Slanting figure	☐	Three figures	☐
Tiny figure	☐	Clouds, rain	☐
Big figure	☐	No eyes	☐
Transparencies	☐	No nose	☐
Tiny head	☐	No mouth	☐
Crossed eyes	☐	No body	☐
Teeth	☐	No arms	☐
Short arms	☐	No legs	☐
Long arms	☐	No feet	☐
Arms clinging	☐	No neck	☐

Total no. of indicators Indiv. adm. ☐☐ Grp. adm ☐☐

EMOTIONAL ADJUSTMENT (continued)

b. Bender Gestalt tester ☐☐

nfused order	☐	small size	☐
vy line	☐	fine line	☐
dashes for circle	☐	overwork	☐
creasing size	☐	second attempt	☐
large size	☐	expansion	☐

	Indiv. Adm.	Grp. Adm.
Total no. emot. indic.		
eighted score		

5. TEACHER RANKING

Position from the bottom of class _____

SPECIAL NOTES

1. Does child wear glasses? Yes ☐ No ☐

2. Handedness Left ☐ Right ☐ Mixed ☐

3. Any obvious medical problems? Yes ☐ No ☐

Explain _____

TEACHER

eacher's name _____

Teacher's Comments	Compare teacher's response to test results: Agrees	Disagrees
1. Intellectual _____	☐	☐
2. Visual motor _____	☐	☐
3. Achievement _____	☐	☐
4. Emotional _____	☐	☐
5. Sociogram _____	☐	☐

eacher Receptivity: Took notes? Yes ☐ No ☐

. Use teacher will make of information

ittle or o use _____ Extensive use

1 2 3 4 5

2. Comments on teacher response to feedback _____

STATUS	Yes	No
Further needs	☐	☐
Rescreening required	☐	☐
Areas _____		
Diagnostic testing required	☐	☐
Priority testing indicated	☐	☐

mments:

DIAGNOSTIC TEST BATTERY

[redacted]tification Number | Name (Last Name, First Name) | Date (Mon Day Yr) | Chron Age (Yr Mon Day) | Sex F M | Ethnicity N S A O | Grade | School

WPPSI
I. Wechsler Preschool and Primary Scale of Intelligence

[redacted] date (Mon Day Yr) | Tester
Chron. age (Yr Mon Day)

[redacted]al Subtests	Scaled Score	Performance Subtests	Scaled Score
Information		Animal house	
[redacted]bulary		Picture completion	
Arithmetic		Mazes	
[redacted]arities		Geometric design	
Comprehension		Block design	
[redacted]ences (supplementary)		Animal house (retest-supplemental)	
[redacted]al IQ Score		Perf. IQ Score	
Diff. ver. & perf. score		Full scale IQ score	

WISC
Wechsler Intelligence Scale for Children

Test date (Mon Day Yr) | Tester
[redacted]n. age (Yr Mon Day)

[redacted]al Subtests	Scaled Score	Performance Subtests	Scaled Score
[redacted]rmation		Picture completion	
Comprehension		Picture arrangement	
[redacted]hmetic		Block design	
Similarities		Object assembly	
[redacted]abulary		Coding	
Digit span		Maze	
[redacted]al IQ Score		Perf. IQ Score	
Diff. ver. & perf. score		Full scale IQ score	

WAIS
III. Wechsler Adult Intelligence Scale

[redacted] date (Mon Day Yr) | Tester
Chron. age

Verbal Subtests	Scaled score
Information	
Comprehension	
Arithmetic	
Similarities	
Digit span	
Vocabulary	
Verbal IQ Score	
Diff. ver. & perf. score	

WAIS (continued)

Performance Subtests	Scaled score
Digit symbol	
Picture completion	
Block design	
Picture arrangement	
Object assembly	
Perf. IQ Score	
Full scale IQ score	

ITPA
IV. Illinois Test of Psycholinguistic Abilities

Test date (Mon Day Yr) | Tester
Chron. age (Yr Mon Day)

	Scaled score
Auditory reception	
Visual reception	
Auditory sequential memory	
Visual sequential memory	
Auditory association	
Visual association	
Verbal expression	
Manual expression	
Grammatic closure	
Visual closure	
Auditory closure (supplemental)	
Sound blending (supplemental)	
Psycholinguistic age	Yr / Mon
Mean scaled score	

Differences Between: (Circle word associated with highest score in each pair)

FROSTIG

[redacted]velopmental Test of Visual Perception

Test date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

[redacted]. age ☐☐ ☐☐ ☐☐ (Yr Mon Day)

	Scaled Score	+ or −	Yr.	Mon.
Eye-Motor Coordination	☐☐	☐	☐☐	☐☐
[redacted] Ground	☐☐	☐	☐☐	☐☐
Form Constancy	☐☐	☐	☐☐	☐☐
[redacted]ion in Space	☐☐	☐	☐☐	☐☐
[redacted]l Relations	☐☐	☐	☐☐	☐☐

Perceptual Quotient ☐☐☐

Perceptual Ranking ☐☐

Areas needing [redacted]ment _____

[redacted]ender Visual Motor Gestalt Test

Test date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

Chron. age ☐☐ ☐☐ ☐☐ (Yr. · Mon. Day)

[redacted]ptual

Total number of errors ☐☐

Standard Deviation from Mean

minus more than 1 S.D. ☐

plus or minus 1 S.D. ☐

plus more than 1 S.D. ☐

Emotional

[redacted]used Order	☐	Small Size	☐
Wavy Lines (fig. 112)	☐	Fine Line	☐
[redacted]hes for Circles (fig. 2)	☐	Over Work	☐
[redacted]asing Size (fig. 1,2,3)	☐	Second Attempt	☐
Large Size	☐	Expansion	☐

[redacted] no. of indicators

Time to adm. (min.) ☐☐

Significant Problem (✓ if yes)

[redacted]ptual ☐ Emotional ☐ Both ☐

VII. Wepman Auditory Discrimination Test

[redacted] date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

Chron. age ☐☐ ☐☐ ☐☐ (Yr Mon Day)

Form A ☐

Form B ☐

Number of Errors

	Yes	No
Problem indicated?	☐	☐
[redacted]t valid?	☐	☐

VIII. Draw-A-Person

Test date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

Chron. age ☐☐ ☐☐ ☐☐ (Yr Mon Day)

Poor integration	☐	Big hands	☐
Shading, face	☐	Hands cut off	☐
Shading, body, limbs	☐	Legs together	☐
Shading, hands, neck	☐	Genitals	☐
Asymmetry of limbs	☐	Monster, grotesque	☐
Slanting figure	☐	Three figures	☐
Tiny figure	☐	Clouds, rain	☐
Big figure	☐	No eyes	☐
Transparencies	☐	No nose	☐
Tiny head	☐	No mouth	☐
Crossed eyes	☐	No body	☐
Teeth	☐	No arms	☐
Short arms	☐	No legs	☐
Long arms	☐	No feet	☐
Arms clinging	☐	No neck	☐

Mental Age ☐☐ (Yr Mon) I.Q. Score ☐☐☐ Total no. of emot. indicators ☐☐

IX. Harris Test of Lateral Dominance

Test date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

Chron. age ☐☐ ☐☐ ☐☐ (Yr Mon Day)

(Check one)

	Yes	No		Preference R	Preference L
Mixed dominance	☐		Hand	☐	☐
Crossed dominance	☐		Foot	☐	☐
Directionality	☐		Eye	☐	☐

WPAT

X. Wide Range Achievement Test

Test date ☐☐ ☐☐ ☐☐ (Mon Day Yr) Tester ☐☐

Chron. age ☐☐ ☐☐ ☐☐ (Yr Mon Day)

	standard score	grade equivalent		percentile
Spelling	☐☐☐	☐☐	☐☐	☐☐☐ ☐
Arithmetic	☐☐☐	☐☐	☐☐	☐☐☐ ☐
Reading	☐☐☐	☐☐	☐☐	☐☐☐ ☐

BEST

XI. Basic Educational Skills Inventory

Test date ☐☐☐☐☐☐ Tester ☐☐
Mon Day Yr

Chron. age ☐☐☐☐☐☐
Yr Mon Day

Test given: A ☐ B ☐ Both ☐

Summary of scores: Test A	Possible	Initial Score	Final Score	Gain ±
1. Memory for Sentences	12			
2. Direction in Space	10			
3. Same or Different	10			
4. Naming the Alphabet from Memory	26			
5. Printing Capital (upper case) Letters of the Alphabet from Memory	52			
6. Manuscript Pringing of Small (lower case) Letters of the Alphabet (dictated)	26			
7. Naming Manuscript Printed Letters	25			
8. Matching Manuscript Letters of the Alphabet	11			
9. Writing & Naming Capital (upper case) Cursive Letters of the Alphabet	52			
10. Naming the Cursive Written Letters	26			
11. Sight Words	112			
TOTAL	362			

A. Areas Needing Enrichment:

Summary of Scores: Test B	Possible	Initial Score	Final Score	Gain ±
1. Rhyming Sounds	10			
2. Initial Consonant and Vowel Sounds (pictorial)	23			
3. Final Consonant Sounds (pictorial)	10			
4. Initial Consonant Blends & Digraph Sounds (pictorial)	19			
5. Final Consonant Blends & Digraphs (pictorial)	7			
6. Auditory Blending of Words (sound only)	8			
7. Initial Consonant Sounds	30			
8. Final Consonant Sounds	22			
9. Initial Consonant Blends and Digraph Sounds	46			
10. Initial Vowel Sounds	20			
11. Medial Vowel Sounds	20			
12. Sounds of Printed Letters (vowels and consonants)	30			
13. Sounds of Printed Letter Blends and Digraphs	32			
14. Beginning and Ending Word Patterns	36			
15. Blending Printed Words	22			
16. Blending Phonetic Elements	22			
17. Double Vowels and Diphthongs	13			
18. Hard and Soft Sounds	6			
19. Prefixes	18			
20. Suffixes	16			
21. Prefixes–Suffixes	6			
22. Syllabification	11			
TOTAL	427			

B. Areas Needing Enrichment:

XII. Peabody Picture Vocabulary Test

Test date ☐☐☐☐☐☐ Tester ☐☐
Mon Day Yr

Chron. age ☐☐☐☐☐☐
Yr Mon Day

Test given: A ☐ B ☐ Both ☐

	Test A	Test B
Raw score	☐☐☐	☐☐☐
Mental age	☐☐☐	☐☐☐
Percentile score	☐☐☐	☐☐☐
I.Q.	☐☐☐	☐☐☐

Health & Developmental History

PRE–NATAL

	yes	no
1. Diabetes?	☐	☐
2. Infection?	☐	☐
3. Toxemic?	☐	☐
4. Other	☐	☐ _____

NATAL

Birth weight ☐☐ lbs. ☐☐ oz.

	yes	no
1. Premature	☐	☐
2. Respiratory distress	☐	☐
3. Infection	☐	☐
4. Jaundice	☐	☐
5. Other congen. anom.	☐	☐ _____

1. Delivery at: home ☐ hospital ☐ en route ☐
2. Delivery type: normal ☐ breech ☐ Caesarean ☐
3. Delivery by: MD ☐ midwife ☐ Other _____

NEO–NATAL

Bottle-fed ☐ Breast-fed ☐

	yes	no
1. Failure-to-thrive	☐	☐
2. Recurrent infection	☐	☐
3. Congenital heart disease	☐	☐
4. Seizures	☐	☐
5. Other neuro. problem	☐	☐

EARLY CHILD

Give age when child did the following:

1. Sat alone _____
2. Began to walk _____
3. Spoke two words together _____
4. Dressed him/her self _____

	yes	no
1. Cradle boarded	☐	☐
2. Banging head on floor or wall	☐	☐
3. Bedwetting	☐	☐
4. Head trauma	☐	☐

5. Parent considers child's development in relation to other children in family to be:
slow ☐ normal ☐ fast ☐

** Forms instituted in September, 1975.

CUBA

PSYCHO-EDUCATIONAL SCREENING SCORE SHEET (FORM A)

☐ NEW ☐ Absent ☐ Moved _____ (Location) Parent's Permission ☐ Yes ☐ No

Child's Name (Last / First) Test Date (Yr. Mo. Day)

Parent's Name Birth Date

Identification Number (Family / Child) Sex Male ☐ Female ☐ Grade K B 1 2 _____ (School) Age

Conflicting Birth Dates ☐ Yes ☐ No

Ethnicity N S A O _____ (Society, if other) Total Time Spent (min.)

Test Conditions 1 (Very Poor) 2 3 4 5 (Ideal)

Child's Attitude 1 (Uncooperative) 2 3 4 5 (cooperative)

Language: Primary Languege used in Testing Situation

☐ English ☐ Spenish ☐ Navajo ☐ Eng-Spanish ☐ Eng-Navajo

SECTION (Circle One Number Each)	L								H
1. Intellectuel Functioning	1	2	3	4	5	6	7	8	9
2. Visual Motor Preception	1	2	3	4	5	6	7	8	9
3. Languege Facility	1	2	3	4	5	6	7	8	9
4. Emotional Adjustment	1	2	3	4	5	6			

SOCIOGRAM

Star ☐
Isolate ☐
Refused to choose ☐
Not done ☐
No. times 1st choice ☐
chosen 2nd choice ☐

HISTORY AND STATUS

Year	Action					Needs					
	S	RS	D	R	None	RS Circle I V L E	RRS Circle I V L E	D	RD	None	See Records
1973-74						I V L E	I V L E				
1974-75						I V L E	I V L E				
1975-76						I V L E	I V L E				
1976-77						I V L E	I V L E				

1. INTELLECTUAL FUNCTIONING (positive indicators)

Tester ☐☐ Time Min. ☐☐ : Sec. ☐☐

A. HFD 1st ☐ 2nd ☐

_____ smile
_____ good facial detail
_____ good clothing detail
_____ good hand detail
_____ good proportion
_____ neck
_____ profile
_____ joints
_____ movements
_____ action

No. of indications ☐☐ Omitted by: Child ☐ Tester ☐

B. Block Design
Raw Score ☐☐
Scaled Score ☐☐
Omitted By: Child ☐ Tester ☐

INTELLECTUAL FUNCTIONING
Weighted Score ☐

2. VISUAL MOTOR

Tester ☐☐
Error Score ☐
Weighted Score ☐
Omitted by: Child ☐ Tester ☐

3. LANGUAGE FACILITY (English)

Wechsler Vocabulary Tester ☐☐

Raw score ☐☐ Scaled Score ☐☐ Weighted Score ☐

Omitted by: Child ☐ Tester ☐

4. EMOTIONAL ADJUSTMENT

HFD ☐ 1st ☐ 2nd Tester ☐☐

(negative indicators)
_____ asymmetry of limbs
_____ slanting figure
_____ tiny figure
_____ tiny head
_____ short arms
_____ long arms
_____ arms clinging to body
_____ big hands
_____ hands cut off
_____ grotesque figure

Omissions
_____ eyes
_____ mouth
_____ body
_____ legs

Number of negative indicators ☐☐
Number of omissions ☐☐
Total number of indicators ☐☐

EMOTIONAL ADJUSTMENT Weighted score ☐

Last Name _____ First _____

Bender Gestalt

Confused order	☐	Small size	☐
Wavy line	☐	Fine line	☐
Dashes for circle	☐	Overwork	☐
Increasing size	☐	Second attempt	☐
Large size	☐	Expansion	☐

Number of indicators ☐☐

Time to adminster Bender Gestalt ☐☐ : ☐☐
min. sec.

TEACHER

Teacher's name _____

1. Intellectual _____
2. Visual motor _____
3. Language _____
4. Emotional _____
5. Sociogram _____

SPECIAL NOTES

1. Any obvious medical problems? ☐ Yes ☐ No

   Explain _____

2. Handedness

   Left ☐
   Right ☐
   Mixed ☐
   Uncertain ☐
   Not Recorded ☐

CUBA

PSYCHO-EDUCATIONAL SCREENING SCORE SHEET (FORM B)

☐ NEW ☐ Absent ☐ Moved _____ (Location) Parent's Permission ☐ Yes ☐ No

Child's Name (Last) (First) Test Date (Yr. Mo. Day)

ent's Name Birth Date

ntification nber (Family) (Child) Sex Male ☐ Female ☐ Grade 3 4 5 _____ (School) Age

Conflicting Birth Dates ☐ Yes ☐ No

nicity S A O _____ (Society, if other) Total Time Spent (Min.) Test Conditions 1 2 3 4 5 (Very Poor … Ideal) Child's Attitude 1 2 3 4 5 (Uncooperative … Cooperative)

guage: Primary Language used in Testing Situation

English ☐ Spanish ☐ Navajo ☐ Eng-Spanish ☐ Eng-Navajo

SECTION (Circle ONe Number Each)	L								H
ntellectual Functioning	1	2	3	4	5	6	7	8	9
2. Visual Motor Preception	1	2	3	4	5	6	7	8	9
chievement (word recognition)	1	2	3	4	5	6	7	8	9
. Emotional Adjustment	1	2	3	4	5	6			

SOCIOGRAM

Star ☐
Isolate ☐
Refused to choose ☐
Not done ☐
No. times 1st choice ☐
chosen 2nd choice ☐

TORY AND STATUS

Year	Action					Needs					
	S	RS	D	R	None	RS Circle I V L E	RRS Circle I V L E	D	RD	None	See Records
3-74						I V L E	I V L E				
1974-75						I V L E	I V L E				
1975-76						I V L E	I V L E				
6-77						I V L E	I V L E				

1. INTELLECTUAL FUNCTIONING

Tester ☐☐ 1st ☐ 2nd ☐ Time Min. ☐☐ : Sec. ☐☐

D-A-P raw score						
			Years			Months
			Years			Months
Discrepancy		+/–				Months

Omitted by: Child ☐ Tester ☐

ock Design (Wisc-R)

Tester ☐☐

aw Score ☐☐

caled Score ☐☐

ted by:

Child ☐ Tester ☐

Intellectual Functioning

Weighted Score ☐

2. VISUAL MOTOR

Tester ☐☐

Error Score ☐☐ Weighted Score ☐

Omitted by: Child ☐ Testor ☐

3. ACHIEVEMENT (wide range – word recognition)

Tester ☐☐

Present grade GR MO ☐☐ Raw Score ☐☐

Grade equivalent GR MO ☐☐ Wtd. score ☐

Discrepancy +/– ☐ ☐☐ Months

Omitted by: Child ☐ Tester ☐

VOCABULARY (WISC)

Raw Score ☐☐

Scaled Score ☐☐

Weighted Score ☐

Omitted by: Child ☐ Tester ☐

Last Name _____ First _____

4. EMOTIONAL ADJUSTMENT

a. H.F.D. 1st ☐ 2nd ☐

Poor integration	☐	Big Hands	☐
Shading, face	☐	Hands cut off	☐
Shading, body, limbs	☐	Legs together	☐
Shading, hands, neck	☐	Genitals	☐
Asymmetry of limbs	☐	Monster, grotesque	☐
Slanting figure	☐	Three figures	☐
Tiny figure	☐	Clouds, rain	☐
Big figure	☐	No eyes	☐
Transparencies	☐	No nose	☐
Tiny head	☐	No mouth	☐
Crossed eyes	☐	No body	☐
Teeth	☐	No arms	☐
Short arms	☐	No legs	☐
Long arms	☐	No feet	☐
Arms clinging	☐	No neck	☐

Total no. of indicators ☐☐

b. Bender Gestalt

Confused order	☐	Small size	☐
Wavy line	☐	Fine line	☐
Dashes for circle	☐	Overwork	☐
Increasing size	☐	Second attempt	☐
Large size	☐	Expansion	☐

Number of indicators ☐☐

Time to adminster Bender Gestalt ☐☐ : ☐☐
min. sec.

EMOTIONAL ADJUSTMENT Weighted score ☐

TEACHER

Teacher's name _____

1. Intellectual _____
2. Visual motor _____
3. Language _____
4. Emotional _____
5. Sociogram _____

SPECIAL NOTES

1. Any obvious medical problems? ☐ Yes ☐ No

   Explain _____

2. Handedness
   - Left ☐
   - Right ☐
   - Mixed ☐
   - Uncertain ☐
   - Not Recorded ☐

APPENDIX H

Developmental Test Score Sheet for

National Child Day Care Association

NATIONAL CHILD DAY CARE ASSOCIATION

DEVELOPMENTAL TEST SCORE SHEET

Child's Number [ ][ ] Ctr [ ][ ][ ] Child

Child's Name [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last [ ][ ][ ][ ][ ][ ][ ][ ] First

PROFILE

	2	2½	3	3½	4	4½	5
Linguistic	•	•	•	•	•	•	•
Cognitive	•	•	•	•	•	•	•
Visual-motor	•	•	•	•	•	•	•
Memory	•	•	•	•	•	•	•

Birthdate [ ][ ] Month [ ][ ] Day [ ][ ] Yr

Sex ☐ Male ☐ Female

Test ☐ Pre ☐ Post ☐ Control ☐ Other

Teacher Name [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last

LANGUAGE TEST TAKEN? ☐ Yes ☐ No TREATMENT NEEDED? ☐ Yes ☐ No

Chronological Age [ ][ ] Yrs. [ ][ ] Mos.

Language Test Age [ ][ ] Yrs. [ ][ ] Mos.

Date of Test [ ][ ] Mon. [ ][ ] Day [ ][ ] Yr.

Examiner [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last Name

2 Years 0 Months

1. Number Correct [ ][ ] (8 minimum) Minimum ☐ Yes Reached ☐ No
2. ☐ Yes ☐ No — Child reacts correctly

2 Years 6 Months

3. Number Correct [ ][ ] (6 minimum) Minimum ☐ Yes Reached ☐ No
4. ☐ Yes ☐ No — Use of pronouns

3 Years 0 Months

5. Number Correct [ ][ ] (10 minimum) Minimum ☐ Yes Reached ☐ No
6. Parts Correct a b c d e f (8 minimum) Minimum ☐ Yes Reached ☐ No
7. ☐ Yes ☐ No — Use of plurals
8. Parts Correct [ ][ ] (3 details) Minimum ☐ Yes Reached ☐ No

3 Years 6 Months

9. ☐ Yes ☐ No — Use of past tense
10. Correct Responses a b c d e (3 minimum) Minimum ☐ Yes Completed ☐ No

11. Correct Responses a b c (2 minimum) Minimum ☐ Yes Completed ☐ No
12. Correct Responses a b c (2 minimum) Minimum ☐ Yes Completed ☐ No

4 Years 0 Months

13. Number Correct [ ][ ] (13 minimum) Minimum ☐ Yes Reached ☐ No
14. Parts Correct a b (1 minimum) Minimum ☐ Yes Reached ☐ No
15. Parts Correct a b c d e f g h i j k (9 minimum) Minimum ☐ Yes Reached ☐ No

4 Years 6 Months

16. Correct Responses [ ][ ] (6 minimum) Minimum ☐ Yes Reached ☐ No
17. Correct Responses a b (1 minimum) Minimum ☐ Yes Reached ☐ No
18. Correct Responses M T W T F S S (6 minimum) Minimum ☐ Yes Reached ☐ No

5 Years 0 Months

19. Correct Responses a b c d e f g h (5 minimum) Minimum ☐ Yes Reached ☐ No
20. Correct Responses a b (1 minimum) Minimum ☐ Yes Reached ☐ No

VISUAL MOTOR TAKEN? ☐ Yes ☐ No TREATMENT NEEDED? ☐ Yes ☐ No

Chronological Age [ ][ ] Yrs. [ ][ ] Mos.

Visual Motor Test Age [ ][ ] Yrs. [ ][ ] Mos.

Date of Test [ ][ ] Mon. [ ][ ] Day [ ][ ] Yr.

Examiner [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last Name

2 Years 0 Months

41. ☐ Yes ☐ No — Correctly Performed

2 Years 6 Months

42. ☐ Yes ☐ No — Correctly Performed R____
43. ☐ Yes ☐ No — Correctly Performed
44. ☐ Yes ☐ No — Correctly Performed

3 Years 0 Months

45. ☐ Yes ☐ No — Correctly Performed
46. ☐ Yes ☐ No — Correctly Performed
47. ☐ Yes ☐ No — Correctly Performed R____

3 Years 6 Months

48. ☐ Yes ☐ No — Correctly Performed
49. ☐ Yes ☐ No — Correctly Performed
50. ☐ Yes ☐ No — Correctly Performed

4 Years 0 Months

51. ☐ Yes ☐ No — Correctly Performed
52. ☐ Yes ☐ No — Correctly Performed R____
53. ☐ Yes ☐ No — Correctly Performed

4 Years 6 Months

54. ☐ Yes ☐ No — 3 Parts Distinguishable
55. ☐ Yes ☐ No — Correctly Performed
56. ☐ Yes ☐ No — Correctly Performed
57. ☐ Yes ☐ No — Correctly Performed

5 Years 0 Months

58. ☐ Yes ☐ No — 4 to 5 Parts Drawn
59. ☐ Yes ☐ No — Correctly Performed
60. ☐ Yes ☐ No — First Name written correctly

COGNITION TEST TAKEN? ☐ Yes ☐ No TREATMENT NEEDED? ☐ Yes ☐ No

Chronological Age [ ][ ] Yrs. [ ][ ] Mon.

Cognition Test Age [ ][ ] Yrs. [ ][ ] Mon.

Date of Test [ ][ ] Mon. [ ][ ] Day [ ][ ] Yr.

Examiner [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last Name

2 Years 0 Months

21. ☐ Yes ☐ No — Correctly Performed
22. ☐ Yes ☐ No — Isolated 1 block
23. ☐ Yes ☐ No — Correctly Performed

2 Years 6 Months

24. ☐ Yes ☐ No — Isolated 1 block
25. ☐ Yes ☐ No — Correctly Identified

3 Years 0 Months

26. Correct Response A B (1 minimum) Minimum ☐ Yes Performed ☐ No
27. Correct Response A B (1 minimum) Minimum ☐ Yes Performed ☐ No

3 Years 6 Months

28. ☐ Yes ☐ No — Correct response
29. ☐ Yes ☐ No — 1 successful Trial R____
30. ☐ Yes ☐ No — Correct response

4 Years 0 Months

31. ☐ Yes ☐ No — Isolated 2 blocks
32. Correct Response A B (1 minimum) Minimum ☐ Yes Performed ☐ No
33. Number Correct [ ][ ] (7 minimum) Minimum ☐ Yes Reached ☐ No

4 Years 6 Months

34. ☐ Yes ☐ No — Correct Response
35. ☐ Yes ☐ No — Isolated 3 blocks
36. ☐ Yes ☐ No — Arranged by Size Increasing or Decreasing
37. Number Correct [ ] (3 minimum) Minimum ☐ Yes Reached ☐ No

5 Years 0 Months

38. Parts Correct a b c (2 minimum) Minimum ☐ Yes Reached ☐ No
39. Correct Response P N O (2 minimum) Minimum ☐ Yes Reached ☐ No
40. ☐ Yes ☐ No — Isolated 8 blocks

MEMORY TEST TAKEN? ☐ Yes ☐ No TREATMENT NEEDED? ☐ Yes ☐ No

Chronological Age [ ][ ] Yrs. [ ][ ] Mon.

Memory Test Age [ ][ ] Yrs. [ ][ ] Mon.

Date of Test [ ][ ] Mon. [ ][ ] Day [ ][ ] Yr.

Examiner [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] Last Name

3 Years 0 Months

61. ☐ Yes ☐ No — Correctly repeated 1 Successful Trial
62. ☐ Yes ☐ No — Correctly Performed

3 Years 6 Months

63. ☐ Yes ☐ No — Recalls a minimum of 2 objects
64. ☐ Yes ☐ No — Correctly Initiated Both Actions
65. Number Correct [ ] (2 minimum) Minimum ☐ Yes Reached ☐ No

4 Years 0 Months

66. ☐ Yes ☐ No — Correctly Performed
67. ☐ Yes ☐ No — Correctly Recalled A____
68. Number recalled [ ] (3 minimum) Minimum ☐ Yes Reached ☐ No

4 Years 6 Months

69. ☐ Yes ☐ No — Correctly Identified
70. Correct Responses a b c d e f (3 minimum) Minimum ☐ Yes Reached ☐ No
71. Number Recalled [ ] (5 minimum) Minimum ☐ Yes Reached ☐ No

5 Years 0 Months

72. ☐ Yes ☐ No — Copied in correct sequence

OBSERVATIONS

LANGUAGE TEST – Picture Vocabulary
(Circle correct response)

1 2 3 4 5 6 7 8 9

10 11 12 13 14 15 16 17

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3 8095 00014783 1